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DISEASES CAUSED BY BACTERIA AND FUNGI

HOFFERBER, O. (1952). Intrauterin entstandene Streptokokken - Endokarditis bei Ferkeln. **[Streptococcal endocarditis in piglets contracted during intra-uterine life.]**—*Mh. Vet-Med.* **7**, 273-274. 320

Five piglets of one litter died eight days to three weeks after birth from ulcerative endocarditis caused by streptococci. From the pathological findings H. concluded that intra-uterine infection occurred.

—A. MAYR-HARTING.

SNOEYENBOS, G. H., BACHMAN, B. A. & WILSON, E. J. (1952). **Abscesses associated with group E streptococci.**—*J. Amer. vet. med. Ass.* **120**, 134-137. 321

Lancefield Group E streptococci were isolated from cervical abscesses in five pigs and from a mammary abscess in an in-contact cow.

—E. A. GIBSON.

WOXHOLTT, C. (1951). Polyvalent pneumococ- (diplococ-) serum til spekalv. **[A polyvalent *Streptococcus pneumoniae* antiserum for unweaned calves.]**—*Nord. Vet.-Med.* **3**, 503-515. [In Norwegian. English and German summaries. Abst. from English summary.] 322

A polyvalent pneumococcus antiserum is prepared at the Veterinary Institute, Oslo, from horses hyperimmunized with a mixture of six named strains of the organism.—R. A. HUCK.

CHODKOWSKI, A. (1949). **The distribution of *Str. agalactiae* outside the bovine udder and its survival.**—*J. Comp. Path.* **59**, 275-283. 323

In tests on 13 farms C. recovered *Streptococcus agalactiae* from swabs from 38% of teats, 5% of skin swabs, 38% from milkers' hands, 20% from clothes and 22% of tests of air, utensils, floors etc. In observations on a highly infected laboratory herd, widespread distribution of the organism was found on the cows' body surface and in parts of the cowshed and in utensils. In two herds the organism was recovered from 61 and 81% respectively of teats with sores, and from 15 and 17% respectively of those without sores. Various materials or sites artificially infected in the cowshed remained positive for 1–20 days. Unsterilized materials (dung, hair, wood, cloth, brick, etc.) soaked with *Str. agalactiae* milk culture and kept at cowshed temperatures in summer and winter usually remained positive for about two weeks. *Str. agalactiae* in milk or culture smeared on various parts of the cows' skin could be recovered for 1–26 days.

—J. E. LANCASTER.

MURPHY, J. M., STUART, O. M. & REED, F. I. (1952). **An evaluation of the CAMP test for the identification of *Streptococcus agalactiae* in routine mastitis testing.**—*Cornell Vet.* **42**, 133-147. [Authors' summary modified.] 324

629 cultures of streptococci isolated from aseptically drawn quarter foremilk were tested by the method described by Christie *et al.* [*V.B.* **16**, 1015]. Of 322 cultures classed as *Str. agalactiae,* 311 produced a positive reaction; 11 failed to react. Of 261 cultures classed as *Str. uberis* (principally because of ability to split aesculin), 222 failed to react; 39 produced some degree of reaction. Of 46 cultures classed as *Str. dysgalactiae,* none produced a reaction.

The presence of 0·1% aesculin in the blood agar significantly enhanced the intensity of the reaction, but did not significantly affect the growth of the streptococci. The additional presence in the blood agar of ferric citrate (10 ml. of 1% aqueous solution per l.) did not affect either the growth of the streptococci or the intensity of the reaction, but did signifi-

NOTE.—*The* V.B. *references given in square brackets now refer to abstract numbers and not to page numbers.*

cantly improve the ability to detect the splitting of aesculin when it occurred.

The distribution of streptococci producing false positive and false negative CAMP reactions was shown, and the use of the CAMP test in routine diagnosis was discussed.

DRURY, A. R. (1952). **Evaluation of neomycin sulfate in treatment of bovine mastitis.**—*Vet. Med.* **47,** 407-411. [Abst. from author's summary.] 325

Neomycin *in vitro* at levels of 0·01 to 0·155 μg. per ml. inhibited the growth of the six commonest causative micro-organisms associated with infectious bovine mastitis.

Infusion of 0·25–5g. into the mammary gland caused a minimum of local irritation in the udder as judged by leucocyte counts, chloride content, resazurin test, pH and strip cup observations. When infused in aqueous solution neomycin remained in the udder for 72 hours or longer. When injected intramuscularly it was demonstrable in the blood for at least eight hours.

The results in treating 405 cases of mastitis indicate this drug to be effective against infections caused by streptococci, staphylococci, *Bact. coli* and a yeast. It was also of value in eight of 14 *Pseudomonas* infections.

There appeared to be no difference in the effectiveness of neomycin when employed in either an aqueous or water-miscible base.

SPECK, R. S., JAWETZ, E. & GUNNISON, J. B. (1951). **Studies on antibiotic synergism and antagonism. The interference of aureomycin or terramycin with the action of penicillin in infections in mice.**—*Arch. intern. Med.* **88,** 168-174. [Abst. in *Bull. Hyg., Lond.* **27,** 168. (1952), modified.] 326

A study of the interference of aureomycin and terramycin with the curative action of penicillin on *Str. pyogenes* and *Bact. friedländeri* infections in mice. In animals treated with a single dose of aureomycin and penicillin, interference was most marked when the dose of penicillin was sufficient, if given alone, to cure about 90% of the animals, and that of aureomycin smaller, such that when used alone it might save only 10 to 20%. As the dose of aureomycin was increased, the results approximated to those produced by penicillin alone. There was no evidence of additive or synergic effect. Terramycin together with penicillin behaved similarly. When repeated doses of these combinations were used interference was much less evident.

ANON. (1952). **Anthrax in bonemeal.**—*N. Amer. Vet.* **33,** 450, 452 & 454. 327

The U.S. Bureau of Animal Industry contemplates restricting the importation of unsterilized bone products as being potential sources of anthrax. Properly manufactured steamed bonemeal and dicalcium phosphate, however, are sterile.—E. A. GIBSON.

MAZZA, G. (1948). Il vaccino anticarbonchioso alla caponina. (Osservazioni ed esperienze.) **[Immunization against *Bacillus anthracis* with saponin vaccine.]**—*Zootec. Vet., Milan.* **3,** 213-225. 328

A general account of the properties of saponin anthrax vaccine, with special reference to its keeping properties, to the action of the saponin and the biochemistry related to its action. Emphasis is laid on the importance of the value of some local reaction to the vaccine for the production of immunity.—L. BADIALI.

CLIFTON, C. E. & EHRHARD, H.-B. (1952). **Nuclear changes in living cells of a variant of *Bacillus anthracis*.**—*J. Bact.* **63,** 537-543. [Authors' summary copied *verbatim*.] 329

Actively multiplying cells of *B. anthracis*, variant RS63, were studied with the aid of the dark phase contrast microscope. Evidence is presented for the existence in a spherical form of nuclear structures in young, actively multiplying cells of this bacillus and for the possibility that the nucleus assumes a resting state between all divisions.

FRANCIS, J. (1950). **Tuberculosis.**—*Nature, Lond.* **165,** 102-104. 330

F. discussed the general position in Great Britain regarding TB. both in human beings and in animals. He discussed the incidence of the disease and the changing position in this respect from the early days of bacteriology to the present time, and pointed out that progress has been both slow and disappointing; he was critical both with regard to the research work done on the subject and the achievements.

He discussed the Attested Herds Eradication Scheme for cattle and also B.C.G. vaccination.—G. V. LAUGIER.

DUHAUT, R. (1951). Rapport de la commission de la tuberculose. **[Report of the Office International des Epizooties on TB.]**—*Bull. Off. int. Epiz.* **36,** 434-443. 331

A discussion on prophylaxis of TB. in cattle as an international problem.

—W. R. BETT.

STUART, P. & MARSHALL, P. M. (1952). **Avian type tuberculosis of the bovine udder.**—*Vet.*

Rec. **64,** 309. [Authors' discussion modified.] 332

Natural infection of cattle with avian type tubercle bacilli has usually no tendency to generalisation but fairly extensive lesions have been reported occasionally by a number of workers. It is not possible to differentiate these lesions from those of bovine type infections by their macroscopic appearance nor by the morphology of the bacilli, but the comparative intradermal tuberculin test indicated the type clearly in the case reported here and in others diagnosed recently.

Involvement of the udder is apparently rare but infection of the uterus with resultant abortions has been described by Plum (1938). Ottosen (1944) drew attention to the frequency with which the serous membranes are involved and it is probable that the peritonitis in this case was tuberculous, although this was not proved. In three out of the remaining four cases of avian type TB. in cattle diagnosed at Weybridge during 1950 the pleura or peritoneum, or both, were affected.

BERGQVIST, S. (1952). **Staphylococci and antihyaluronidases. A sero-bacterologic and clinical investigation with special reference to tuberculosis.**—*Acta med. scand.* Suppl. No. 267. pp. 80. [In English.] 333

Antihyaluronidase titres are more frequently raised in patients with TB. than in non-tuberculous patients. Staphylococci, streptococci and pneumococci probably play a part in the pathogenesis of TB. The presence of antihyaluronidases suggests that the tissues are subjected to the constant or intermittent action of bacterial hyaluronidase, which helps the spreading of tubercle bacilli and enhances the progress of the disease.—W. R. BETT.

COLLET, P., CANTENOT, G. & COULON, J. (1951). Essais de traitement de la tuberculose externe du chat par la dihydrostreptomycine. **[Treatment of external tuberculous lesions of the cat with dihydrostreptomycin.]**—*Bull. Soc. Sci. vét. Lyon.* **53,** 19-35. 334

Daily subcutaneous doses of 0·5 g. of dihydrostreptomycin were well tolerated by all but one of eight cats and produced lasting clinical cures in tuberculous skin, eye and open bone lesions.—G. P. MARSHALL.

DOMAGK, G. (1949). Die Chemotherapie der Tuberkulose unter Ausschluss der Antibiotica. **[Chemotherapy of TB., other than by antibiotics.]**—*Schweiz. Z. Path. Bakt.* **12,** 575-596. 335

A discussion on the literature, with bibliography, on the thiosemicarbazones, streptomycin, and *p*-aminosalicylic acid in experimental TB. in animals and in clinical cases. [The title is misleading as streptomycin was included.] —W. R. BETT.

ARONSON, J. D., EHRLICH, S. L. & FLAGG, W. (1952). **Effects of isonicotinic acid derivatives on tubercle bacilli.**—*Proc. Soc. exp. Biol., N.Y.* **80,** 259-262. [Authors' conclusions copied *verbatim.*] 336

The oxygen consumption and catalase activity of both virulent and attenuated strains of tubercle bacilli was reduced significantly by isonicotinic acid hydrazide from 2 different laboratories while the activity of succinic dehydrogenase was unaffected. 1-isonicotinyl-2-isopropylhydrazine slightly inhibited the oxygen consumption of both virulent and attenuated strains of tubercle bacilli, but did not modify the action of succinic dehydrogenase of these cultures. However, the catalase activity of the attenuated BCG strain was significantly reduced, while the catalase activity of the virulent strains was unaffected.

SWINDLE, B. C., BAISDEN, L. A., JOHNSON, H. W. & HENLEY, R. R. (1950). **Studies of tuberculin. I. The comparison of various types of tuberculin tests on reactor cattle.**—*Proc. U.S. Livestock sanit Ass.* 54*th Ann. Meeting.* pp. 110-121. 337

From a comparative study of various tuberculin tests made with special reference to herds in which such testing had been giving unsatisfactory results, it was concluded that the intradermal test in the neck is of particular value in herds where repeated tests give a considerable number of "no lesion" cases.—G. V. LAUGIER.

BOYDEN, S. V. & SUTER, W. E. (1952). **Stimulating effect of tuberculin upon production of circulating antibodies in guinea pigs infected with tubercle bacilli.**—*J. Immunol.* **68,** 577-589. [Authors' summary modified.] 338

G. pigs infected with small amounts of tubercle bacilli and not subsequently skin tested did not produce, in detectable amount, antibodies which agglutinated sheep erythrocytes sensitized with Old Tuberculin. When g. pigs, previously infected with B.C.G., were injected with small amounts of Old Tuberculin, agglutinating antibodies appeared in the blood within 4–5 days. Antibodies agglutinating erythrocytes sensitized with Old Tuberculin appeared also when B.C.G. infected g. pigs were injected with ovalbumin. This stimulation by Old Tuberculin of the production of agglutinating antibodies did not seem to be correlated with the existing

degree of skin hypersensitivity to tuberculin. However, the stimulating effect became apparent only after hypersensitivity was established.

The simultaneous injection of Old Tuberculin and ovalbumin into g. pigs, either normal or infected with B.C.G., resulted in considerably higher titres of antibodies to ovalbumin than were produced by the injection of ovalbumin alone.

In order to avoid confusion of substances of bacterial origin which sensitize erythrocytes to agglutination by specific antibacterial serum with bacterial haemagglutinins, which themselves cause agglutination of erythrocytes, the authors proposed to use the term "bacterial hemosensitins" for the former.

GILLISSEN, G. & ROCHOLL, G. (1951). Immunisierungsversuche an Meerschweinchen mit dem Tuberkelbakterienstamm von S. Arloing und P. Courmont. **[Immunization experiments in g. pigs with *M. tuberculosis* strains of S. Arloing and P. Courmont.]**—*Z. Hyg. InfektKr.* **133**, 223-230. 339

After cultivation for 50 years by Courmont, a human strain of *M. tuberculosis* which Arloing isolated in 1898 produced no lesions when injected subcutaneously or intracardially into g. pigs. When these g. pigs were subsequently inoculated with 0·08 mg. of virulent human type *M. tuberculosis* they developed more proliferative lesions and had a longer survival time than control g. pigs (eight animals in each group).—E. G. WHITE.

VAN RIJSSEL, T. G. (1947). De ziekte van Besnier-Boeck en bacteriëel-allergische ontstekingsprocessen. **[Besnier-Boeck disease (sarcoidosis), and allergic bacterial inflammations.]**—*Thesis. Utrecht.* pp. 224. [English summary.] 340

A general account of the condition commonly known as Boeck's sarcoid and here referred to as Besnier-Boeck's disease. The author spoke of difficulties in diagnosis, as a consequence of which the literature on the subject is not always clear. He referred to the resemblance of certain of the lesions to those of TB., emphasizing that the cases seldom have clinical TB. He concluded that the disease is a form of TB. characterized by a special state of allergy which he speaks of as "euergie". The author suggested that the allergic character of this disease might explain the absence of *M. tuberculosis*. [The interest of this subject is that there is possibly some clinical resemblance to the so-called "skin TB." of cattle.]

—C. A. VAN DORSSEN.

TAYLOR, A. W. (1952). **Further observations on the incidence of infection with *M. johnei* in cattle.**—*Vet. Rec.* **64**, 603-605. [Abst. from author's summary.] 341

M. johnei was isolated in culture from the ileo-caecal lymph nodes of 101 of 665 graded cattle consigned to an abattoir, and from eight of 136 surplus adult attested cattle from an estate on which for many years clinical Johne's disease had not been a herd problem.

STUART, P. & HARVEY, P. (1951). **Bovine mastitis resembling tuberculosis caused by *Mycobacterium lacticola* and other rapidly growing acid-fast bacteria.**—*Vet. Rec.* **63**, 881-885. 342

The authors described five cases of mastitis resembling TB. in cows from three attested herds, from which a rapidly growing organism, *M. lacticola*, was isolated. Numerous and repeated inoculations into g. pigs, rabbits and fowls all failed to cause TB. The affected cattle did not react to either avian or mammalian types of tuberculin. The lesions in the udders were granulomata containing giant cells. The acid-fast bacilli were concentrated in oil globules in the centre of the lesions. In all cases the udders had previously been infused with penicillin and sulphone in oil. The condition was reproduced experimentally by the infusion of normal udders with oily, but not with aqueous, suspensions of the organisms.

MEYN, A. (1951). Die apathogenen Mycobakterien und ihre Wuchsformen auf Tuberkelbakteriennährböden. **[Non-pathogenic mycobacteria and their growth on media for *M. tuberculosis*.]**—*Z. Hyg. InfektKr.* **133**, 127-131. 343

M. commented on the striking similarity of the growth on Petragnani medium of tubercle bacilli and saprophytic acid-fast bacteria (*M. lacticola* and *M. phlei*) and gave photographs. On some occasions the saprophytic organisms develop slowly and produce small colonies only after 2–3 weeks. Confusion is avoided if plain media are also used.—E. G. WHITE.

PAILLE, R. & HARS, E. (1949). Vaccination du porc contre le rouget. Essais expérimentaux. **[Immunization of pigs against swine erysipelas.]**—*Bull. Acad. vet. Fr.* **22**, 435-439. 344

Exposing pigs from three different sources to four different strains of *E. rhusiopathiae* by subcutaneous inoculation or scarification, it was found that the bacterial strains varied in virulence for the pig, and that, while pigs from one

source were fully susceptible to infection, those from another were less so and those from a third were completely resistant.

[An attempt to compare the efficacy of the serum-simultaneous method of immunization with that of an aluminium hydroxide adsorbate vaccine was vitiated by the design of the experiment.]—J. T. DONE.

DOYLE, T. M. (1952). Immunisation contre le rouget du porc. **[Immunization against swine erysipelas.]**—*Bull. Off. int. Epiz.* **38,** May. pp. 140-149. [Author's English summary modified.] 345

Swine erysipelas has been for many years a major disease of pigs, second in importance only to swine fever, causing serious economic loss through deaths, unthriftiness, stunted growth and chronic lameness. The incidence, distribution, character and mortality of the infection vary considerably from one country to another. Because pigs are insusceptible to artificial infection with *E. rhusiopathiae* there is a lack of accurate data on the degree and duration of immunity conferred by any of the vaccines in general use. It is difficult therefore to discuss the relative value of vaccines, but it is probably true to say that the different types have given satisfactory results when used under optimum conditions. A considerable amount of work has been carried out in recent years on potency tests of vaccines by the skin scarification technique, and although this method has given satisfactory results to some investigators, others have found it of little value. Work carried out at Weybridge has shown that pigs immunized against swine fever (crystal violet vaccine followed by virus) became susceptible to artificial infection with *E. rhusiopathiae.* This method can be used for the accurate determination of the degree and duration of the immunity conferred by a vaccine. It is suggested that the persistence of swine erysipelas in certain herds is caused by the presence of subclinically infected animals excreting virulent *E. rhusiopathiae* in the faeces. The use of the agglutination test for detecting these animals, their elimination and the immunization of the remaining stock is suggested as a possible means of overcoming the infection.

MCERLEAN, B. A. & COLLINS, J. J. (1952). **Septicaemic bovine pasteurellosis.**—*Irish vet. J.* **6,** 327-328. 346

A four-month-old calf developed haemorrhages from the natural orifices and from the unbroken skin. On P.M. examination *Past. multocida* was recovered from the heart blood and visceral organs of the calf and from a mouse and a rabbit which died within a day of inoculation.—JAS. G. O'SULLIVAN.

VAN DORSSEN, C. A. (1952). Oriënteerende proeven over therapie en vaccinatie bij pseudotuberculosis van knaagdieren. **[Treatment and prevention of *Pasteurella pseudotuberculosis* infection in rodents.]**—*Tijdschr. Diergeneesk.* **77,** 235-255. [English summary.] 347

Considerable experimental work was carried out in connexion with an outbreak of *Past. pseudotuberculosis* infection in a colony of nutria. Rabbits and g. pigs were artificially infected and treated in various ways with streptomycin, which was found to possess activity at 5 μg. per ml. *in vitro.* In the test animals, cures could be obtained with this drug only in high dosage. A useful degree of immunity could be set up by vaccination with formolized culture.—J. EDWARDS.

I. PEGREFFI, G., QUESADA, A. & PAPANDREA, E. (1951). Ulteriori ricerche sull'azione vaccinante delle culture di pasteurelle aviari devitalizzate mediante antibiotici (vaccino alla streptomicina contro il colera aviare). **[A fowl cholera vaccine made from cultures treated with streptomycin.]**—*Atti Soc. ital. Sci. vet.* **5,** 280-285. [English and French summaries.] 348

II. MURA, D. & CONTINI, A. (1951). Reazioni immunitarie da inoculazioni di mestrui batterici antipasteurelle devitalizzati da antibiotici. **[Immunizing activity of *Pasteurella* cultures treated with penicillin.]**—*Ibid.* 285-292. [English and French summaries.] 349

I. The authors stated that the antigenic activity of streptomycin-treated fowl cholera vaccines resides in the bacteria themselves, which are not killed but merely "devitalised".

II. Marked lymphocytosis was produced in rabbits inoculated with "penicillin-devitalised" fowl cholera vaccine. This did not occur when a fowl cholera vaccine not so treated was used.—G. P. MARSHALL.

DELPY, L. P. & MIR CHAMSY, H. (1949). Préparation d'antigènes immunisants et d'allergènes par l'hydrolyse pepsique de certaines bactéries. Immunisation contre les pasteurelloses. **[Preparation of immunizing *Pasteurella* antigens.]**—*Arch. Inst. Hessarek.* No, 6. pp. 32-34. 350

In previous work the authors had shown that bacteria lysed by saponins had good immunizing action. The use of these vaccines was, however, limited because of the toxicity of

saponin. In this paper they described the use of vaccines prepared by peptic digestion of bacteria. Suspensions of *Pasteurella, Brucella* and other organisms in distilled water were lysed by pepsin at pH 3·0 at 37°C. for 12 hours; these lysates are not toxic. The very toxic lysates of *Pfeifferella mallei* can be detoxicated by the combined action of heat and formalin.

—A. MAYR-HARTING.

TOBA, A. & SHIGA, K. (1949). **[Immunological study on bacterial body constituents of *Salmonella abortus-equi*.]**—21*st Rep. Govt. exp. Sta. Anim. Hyg., Tokyo*. 1949. pp. 169-208. [Abst. from English summary.] 351

Polysaccharide extracted from *S. abortus-equi* was an "O" complete antigen, the protein related to "H" antigen, the fat and phosphatide being non-antigenic. The polysaccharide was the most toxic, the phosphatide being non-toxic but responsible for the formation of nodules in the liver.—W. J. BRINLEY MORGAN.

SCHMID, E. E. & VELAUDAPILLAI, T. (1952). **On an antigenic relationship between the *Salmonella* and *Escherichia* groups.**—*Boll. Ist. sieroter., Milano*. **31**, 284-286. [In English. Italian summary. Abst. from authors' summary.] 352

A note on the close relationship which exists between somatic antigen XXXV of *Salmonella* and III of a strain of *Escherichia* isolated from infantile enteritis.

WATTS, P. S. & WALL, M. (1952). **The 1951 *Salmonella typhi-murium* epidemic in sheep in South Australia.**—*Aust. vet. J.* **28**, 165-168. 353

The authors recorded a widespread epidemic in sheep of infection with *S. typhi-murium*. The disease was identified on nine widely-separated properties and probably more were involved. The mortality rate was 3–4%. Crows, magpies, eagles, hawks, parrots, pigeons, foxes and rabbits were examined and it was found that crows and magpies, together with one hawk and one fox, were infected with the organism. Infection was spread from property to property by birds, which fouled the water supplies. The birds were found to be infective up to 27 days after feeding on infected material. Contaminated earth remained infected for at least 200 days and water for 119 days. Two experimentally infected sheep remained carriers for 14 and 67 days respectively, though apparently healthy.—D. F. STEWART.

RAC, M. & WALL, M. (1952). **A case of uterine infection with *Salmonella meleagridis* in a sheep.**—*Aust. vet. J.* **28**, 173. 354

Salmonella meleagridis was isolated from the uterus of a ewe. The affected horn contained a bloody necrotic mass of placental material together with a macerated foetus.

—D. F. STEWART.

WILLIAMS SMITH, H. & BUXTON, A. (1950). **Incidence of salmonellae in faeces of dogs suffering from distemper.** [Correspondence.] —*Nature, Lond.* **166**, 824. 355

Cruickshank & Williams Smith [*V.B.* **21**, 653] and Wolff *et al.* [*V.B.* **19**, 640] respectively reported that 1% of healthy dogs in London and 18% of healthy dogs in Michigan, U.S.A. were excreting salmonella in their faeces. The authors of this note carried out further tests on 100 dogs from the London area, affected with distemper or hard pad disease, and confirmed their previous findings in healthy dogs, *S. typhi-murium* being isolated from one faecal sample. It is suggested that the high incidence among dogs in the U.S.A. probably resulted from a difference in their diet.

—A. MAYR-HARTING.

MORCOS, Z. (1952). **Experiments on salmonellosis of fowls.**—*Brit. vet. J.* **108**, 376-382. [Author's summary modified.] 356

Diagnosis by spreading of blood clot without serum on to McConkey medium is as rapid as any other test, and is reliable. Treatment with three successive doses of terramycin 250 mg. is satisfactory.

PETERSON, J. E. & LARKIN, J. V. (1952). **The feeding of fish-oil supplements in relation to pullorum testing of poultry.**—*Aust. vet. J.* **28**, 201-203. [Authors' summary copied *verbatim*.] 357

Experimental and field evidence is presented which indicates that the feeding of fish-oil supplements to poultry may result in the production of false positive reactions to the agglutination test for pullorum disease. Not all samples of oil appear to be implicated.

These false reactions develop within a few weeks of the commencement of feeding the oil and disappear equally rapidly when the oil is removed from the diet. It is recommended that for a period of at least four weeks prior to pullorum testing no fish-oil supplements should be fed.

ROOTS, E. (1952). Serologische Variation bei Salm. gallinarum (S. pullorum) und ihre Bedeutung für die Serodiagnostik der weissen Kükenruhr. **[The importance of serological variation in *S. pullorum* strains for diagnosis of bacillary white diarrhoea in chicks.]**—

Berl. Münch. tierärztl. Wschr. **65**, 108-111. 358

An antigenic analysis of 48 strains of *S. gallinarum* was carried out. 39 of the strains had the complete set of antigens: IX, XII_1, XII_2, XII_3. The remaining nine had either lost XII_2 completely, or colonies with and without this partial antigen were present. The strains that possessed XII_2 had never lost XII_3 although this has been reported of American strains. 603 sera were tested with antigens prepared with either kind of strains. 8% of infections would have been missed if the XII_2-negative strain alone had been used as an antigen.—A. MAYR-HARTING.

VAN ULSEN, F. W. (1952). Salmonella bareilly bij kuikens. [*Salmonella bareilly* **infection in chicks.**]—*Tijdschr. Diergeneesk.* **77**, 636-639. [English, French and German summaries.] 359

In four outbreaks of *S. bareilly* infection in baby chicks in the spring of 1952 there was 15–50% mortality in the first two weeks of life. There was a spread of infection from chick hatcheries. Contact infection could not be established. Spontaneously infected five-day-old White Leghorn chicks were mixed with healthy Rhode Island Red chicks [numbers not stated]. Although 50% of the Leghorns died, no disease occurred in the Rhode Island Reds. One infected chick that excreted *S. bareilly* in its faeces was placed in close contact with a healthy three-week-old chick. After one week the latter died of acute coccidiosis, but no *Salmonella* were isolated from organs or bowel contents.

Many samples of chicken faeces from an egg-producing farm from which infected chicks were hatched were cultured with negative results.—C. A. VAN DORSSEN.

GOODLOW, R. J., TUCKER, L., BRAUN, W. & MIKA, L. A. (1952). **Effect of the isomeric configuration of the source of nitrogen on changes in population and metabolism in cultures of** *Brucella*.—*J. Bact.* **63**, 681-685. 360

The use of L-asparagine prevented aniline accumulation and bacterial variation in cultures of *Br. abortus*. Other strains showed different relationships.—E. A. GIBSON.

GREGORY, T. S. (1952). **A comparison of the effects of intracaudal and subcutaneous vaccination of calves with** *Brucella abortus*, **Strain 19. II. Immunity during the first pregnancy, in the second year after vaccination.**—*Aust. vet. J.* **28**, 194-200. [Author's summary slightly modified.] 361

Two comparable groups of about 40 heifers, which had been vaccinated when about 7–10 months old by the injection of 1·0 ml. Strain 19 vaccine intracaudally or 5·0 ml. subcutaneously, were exposed to natural infection in a heavily contaminated environment, together with a control group of similar size.

When results in the control group were taken as an indication of expected rates of abortion and infection, it was found that there was a reduction in the abortion rate of about 87% in the intracaudal group and about 71% in the subcutaneous group; the corresponding reductions in infection rates were approximately 72% and 57%. As the groups were not large, no special significance was attached to the differences in favour of the intracaudal group. Variations in age at vaccination, within the period of 7–10 months, did not influence resistance or immunity.

It was concluded that the intracaudal method of calfhood vaccination had proved at least as effective as the standard subcutaneous method when immunity was challenged during the first pregnancy, in the second year after vaccination.

GARGANI, G. & SANTONI, M. G. (1952). Ricerca di una capsula batterica microscopicamente visible nel genere Brucella. Esperienze "in vitro" e "in vivo". [**Attempts to demonstrate the presence of a bacterial capsule in some organisms of the** *Brucella* **group,** *in vitro* **and** *in vivo*.]—*Boll. Ist. sieroter., Milano.* **31**, 265-273. [Abst. from English summary.] 362

Bacterial capsule could not be demonstrated in 117 strains of *Brucella* cultivated in various media, nor in strains inoculated intraperitoneally into g. pigs, using the Indian ink technique.

SANDERS, E. & WARNER, J. (1951). **A study of urease activity in cells of the genus** *Brucella*. —*J. Bact.* **62**, 591-598. 363

Br. suis and *Br. abortus* show a high and low urease activity respectively, but the authors state that the wide range of activity within the species *Br. melitensis* prevents the differentiation of the three species by this test.

—E. A. GIBSON.

CARPENTER, C. M., BOAK, R. A. & DEBOER, C. J. (1952). **Serologic and dermal reactions in guinea pigs injected intradermally with** *Brucella* **antigens.**—*J. Immunol.* **69**, 235-239. [Authors' summary modified.] 364

Dermal sensitivity was not induced in g. pigs by repeated intradermal injections of brucellergen, brucellin, or a *Brucella* vaccine

containing 200 million dead cells per ml. Repeated intraperitoneal injections of g. pigs with brucellergen or brucellin failed to stimulate a significant production of either agglutinins or complement-fixing antibodies. *Brucella* vaccine prepared from dead cells was, however, antigenic when administered intraperitoneally and caused significant antibody formation.

The quantity of each agent required to cause production of serum antibody is many times the amount used in successive intradermal tests. The order of increasing antigenicity of the *Brucella* preparations tested was: brucellergen, brucellin, and *Brucella* vaccine. The data obtained from g. pigs indicate that repeated intradermal tests with brucellergen will not sensitize patients to protein nucleates derived from *Brucella*.

VICTOR, J., WELLS, E. B., CLEMENTS, J. & POLLACK, A. D. (1952). **The bactericidal action of dog blood against *Brucella suis*.**—*J. infect. Dis.* **91,** 19-25. [Authors' summary slightly modified.] 365

The bactericidal effects of dog whole blood, plasma, washed blood cells, buffy coat, and of red blood cells were compared under various conditions of temperature, time, additions of fresh blood, volume of blood, and number of *Br. suis*.

Formed elements plus plasma were essential for the bactericidal action of heparinized dog blood against *Br. suis* PSIII. Leucocytes were more effective than red blood cells. Citrate abolished bactericidal action of dog blood. There was no significant bactericidal activity either in heparinized or citrated dog plasma or in washed blood cells. Phagocytosis was independent of bactericidal activity.

TZORTZAKIS, N. (1951). **[Control of *Brucella melitensis* infection in Greece.]**—*Delt. Hellen. kten. Hetair.* **2,** 16-21. [Abst. from French summary.] 366

Br. melitensis infection in goats occurs in Greece. T. discussed control measures.

I. RODE, L. J., LANKFORD, C. E. & SCHUHARDT, V. T. (1951). **Studies of sulfur metabolism of *Brucella suis*.**—*J. Bact.* **62,** 571-582. [Abst. from authors' summary.] 367

II. SCHUHARDT, V. T., RODE, L. J., OGLESBY, G. & LANKFORD, C. E. (1952). **Toxicity of elemental sulfur for brucellae.**—*Ibid.* **63,** 123-128. [Abst. from authors' summary and conclusions.] 368

I. The authors investigated the sulphur nutrition of 10 strains of *Br. suis* in a sulphur-free, chemically-defined medium, and in a casamino acids medium rendered free from available sulphur compounds by treatment with hydrogen peroxide.

II. The authors isolated elemental sulphur from autoclaved cystine solutions. Colloidal dispersions of this and other sulphur samples were toxic for certain strains of *Brucella* in concentrations as low as 0·06 μg. per ml. of culture medium. This toxicity was comparable in all respects tested to the anti-brucella toxicity of autoclaved cystine and toxic tryptose. A possible mechanism for the heat degradation of solutions of cystine to elemental sulphur was described.

LABZOFFSKY, N. A. & SPRENT, J. F. A. (1952). **Tularemia among beaver and muskrat in Ontario.**—*Canad. J. med. Sci.* **30,** 250-255. 369

In 1949, an extensive outbreak of disease occurred among beavers in Patricia district in Ontario. Beavers from other districts were also examined and *Brucella tularensis* was isolated from these animals in three widely separated districts. G. pigs, eight-day-old chick embryos and cystine-blood-agar were used for isolation of the organism, which was identified by agglutination tests with known *Br. tularensis* antiserum. The authors gave details of the pathological findings in beaver, muskrats and g. pigs, and details of the isolation and identification of the organism. The precise mode by which the organism is maintained and disseminated under natural aquatic conditions remains unascertained. Other work has suggested that it may be spread by water and a water-mud mixture may act as a medium for proliferation of the organism under natural conditions.

—R. GWATKIN.

GORRIE, C. J. R. (1952). **Vaccination against spirochaetosis in fowls. II. A further report.**—*Aust. vet. J.* **28,** 155-156. [For previous report, see *V.B.* **22,** 2413.] 370

To test the duration of immunity conferred by vaccination with formolized egg embryo vaccine [see *V.B.* **22,** 2413] G. vaccinated 5–6-month-old White Leghorn cockerels with 0·5 or 1·0 ml. and retained an equal number as controls. The results of both artificial challenge by oral administration of infective blood clot, and natural challenge by exposure in a shed heavily infested with ticks on a farm where spirochaetosis was endemic indicated that effective resistance of at least one year's duration could be expected from a single subcutaneous dose of 0·5 ml. of formolized egg embryo vac-

cine. G. stated that such a solid immunity might not result from vaccinating younger birds.—D. A. GILL.

BRUERE, A. N. (1952). **An association between leptospirosis in calves and man.**—*Aust. vet. J.* **28,** 174. 371

Three men working on a farm where calves were infected with *Leptospira pomona* also contracted the infection. The calves were confined to a small paddock into which the piggery drained. It is suggested that infection of human beings might take place by skin penetration.—D. F. STEWART.

HARTLEY, W. J. (1952). **Ovine leptospirosis.**—*Aust. vet. J.* **28,** 169-170. 372

Two outbreaks of leptospirosis in sheep were recorded. Twelve lambs and two ewes died in the first outbreak. Diagnosis was based on the P.M. findings and the presence of leptospira in sections of the liver and kidney. The organism was isolated from the urine of a lamb on another property in the following year and was transmitted to a g. pig. Sera from recovered cases agglutinated a strain of *L. pomona*. Details of the histological findings were given.
—D. F. STEWART.

WAGENER, G. (1951). Serologische Untersuchungen von Hunden auf Canicola-Infektion. [**Serological examination of dogs infected with** *Leptospira canicola*.]—*Mh. Vet.-med.* **6,** 4-8. 373

W. reported on the serological examination of a total of 284 blood samples from dogs in Berlin, comprising 55 sick dogs under treatment for various ailments, 101 clinically healthy dogs from a dogs' home and 128 police dogs. None were positive for *L. icterohaemorrhagiae*. Of the 55 sick dogs, some of which were suspected clinically to be infected with leptospirosis, 11 were positive for *L. canicola*: 22 of the dogs from the dogs' home and 25 of the apparently healthy police dogs were also positive. Sera which were positive to the agglutination-lysis test were confirmed by complement fixation.

Not all of the animals in the first group were likely cases of leptospirosis: in some instances it was merely a matter of excluding its existence. This may explain the low incidence of positive cases in this group. In the dogs' home there were not more than three dogs in each cage and regular cleaning and disinfection were practised. W. suggested that the incidence in this group (21·7%) represents the true incidence in the general dog population of Berlin. The high incidence among police dogs was disturbing: W. suggested that all such animals should be examined serologically when admitted and again every six or 12 months.—E. G. WHITE.

LÜBBERS, P. (1951). Über das Vorkommen des Leptospira saxkoebing in Schleswig-Holstein. [**Occurrence of** *L. saxkoebing* **in Schleswig-Holstein.**]—*Z. Hyg. InfektKr.* **132,** 347-351. 374

L. saxkoebing was isolated from a dog on a farm near Lübeck and leptospirosis was diagnosed serologically in four persons living on the farm. An unrelated case in a man was also described and two cases diagnosed serologically in dogs were mentioned in an addendum.—E. G. WHITE.

EZELL, S. B., HOAG, W. G., WARNER, A. R., YAGER, R. H. & GOCHENOUR, W. S., JR. (1952). **Soluble specific leptospiral complement-fixing antigens.**—*Proc. Soc. exp. Biol., N.Y.* **80,** 220-223. [Authors' summary copied *verbatim*.] 375

A soluble, specific complement-fixing antigen, or antigen complex, was demonstrated in the organism-free culture liquor of each leptospiral strain studied. The antigenic material is heat stable and nonprotein in nature. The antigens are present in amounts which make feasible their employment in serological investigations of the leptospiroses.

IYER, S. V. (1952). **A study of the organisms responsible for outbreaks of black-quarter in the Madras State.**—*Indian vet. J.* **29,** 27-34. [Abst. from author's summary.] 376

Out of 30 specimens of muscle from blackleg cases received from the staff of the Madras State, *Cl. chauvoei* was isolated from 26, *Cl. septicum* from one and a mixture of *Cl. chauvoei* and *Cl. septicum* from three. The author noted that *Cl. welchii* was not met with in the above specimens.

Based on the results of the above work, *Cl. septicum* is incorporated with *Cl. chauvoei* in the blackleg vaccine now supplied from the Veterinary Biological and Research Institute, Ranipet. This polyvalent vaccine is reported to be yielding very good results.

WOOLMER, R. & CATES, J. E. (1952). **Succinylcholine in the treatment of tetanus.**—*Lancet.* **263,** 808-809. [Authors' summary slightly modified.] 377

Succinylcholine was given for three and a half days by continuous intravenous drip to a human patient with tetanus. Administration

needed practically constant medical supervision. Succinylcholine given in this way seemed to be a valuable contribution to recovery.

SIMINTZIS, G. & DURIN, L. (1950). Épizootie de botulisme chez le porc. **[Botulism in swine.]**—*Bull. Soc. Sci. vét. Lyon.* **52,** 71-76. 378

Botulism in swine was marked by salivation, trembling of the lips, blindness or partial blindness, vertigo, and motor incoordination. Glucose and albumin appeared in the urine. In the later stages the animals became recumbent and completely paralytic.—F. R. HARRIS.

I. SPAÏS, A. (1951). **[Epizootic lymphangitis.]** —*Delt. Hellen. kten. Hetair.* **2,** Oct.-Dec. pp. 152-160. 379

II. SPAÏS, A. (1952). **[Epizootic lymphangitis in Greece.]**—*Ibid.* Jan.-March, pp. 31-37. [French summary.] 380

I & II. Epizootic lymphangitis was re-introduced into Greece after the second world war by army mules brought from Italy. S. gave details of the treatment of 32 cases, 23 in horses, 9 in mules. All the mules and 12 of the horses were cured. Seven had to be destroyed.

S. advocated the adoption in Greece of the policy of slaughtering all infected animals. —J. M. TAIT.

ROBINSON, V. B. & MCVICKAR, D. L. (1952). **Pathology of spontaneous canine histoplasmosis [*H. capsulatum*]. A study of twenty-one cases.**—*Amer. J. vet. Res.* **13,** 214-219. 381

In *H. capsulatum* infection in dogs, symptoms noted included a chronic cough, irregular appetite, intermittent diarrhoea, gradual loss of weight, spreading of the posterior ribs and distension of the abdomen, an elevated temperature, some degree of anaemia and icterus, and emaciation. Death occurred 5–9 weeks after the gradual and insidious onset of the disease.

Complete P.M. examinations were made in 11 of 21 cases, and material was examined from the others. The general pathological picture was of a disseminated proliferation of macrophages, many of them being parasitized by *H. capsulatum,* sometimes accompanied by necrosis and fibrosis. Lesions were present in the lungs, thoracic and abdominal lymph nodes and small intestine in each case studied. The lungs showed partial collapse, with focal consolidations which in some cases resembled metastatic tumours; there was cavitation. The lymph nodes were enlarged, with some necrosis and connective tissue proliferation. The wall of the small intestine was unevenly thickened, with in some cases plaque-like areas which might be ulcerated.

Other lesions included a thickening of the mesentery and omentum, patchy involvement of the liver, enlarged peripheral lymph nodes, spleen and tonsils, and parasitized macrophages in the bone marrow, adrenal glands, kidneys and testes. No lesions were detected in the central nervous system. Five of the 13 hearts examined had single circumscribed degenerated areas in the right ventricular wall; in three cases calcified material was present under the endocardium of both auricles, and a similar lesion was present in the ascending aorta of one animal.—E. COTCHIN.

FURCOLOW, M. L. & LARSH, H. W. (1952). **Direct isolation of *Histoplasma capsulatum* from soil: probable etiological relationship to Camp Gruber pneumonitis.**—*Proc. Soc. exp. Biol., N.Y.* **80,** 246-248. [Authors' summary slightly modified.] 382

The authors reported the first direct isolation of *H. capsulatum* from natural sources; *i.e.,* soil from a disused cellar in which severe pneumonitis was contracted by soldiers in 1944. This organism was also isolated from soil from the same cellar following animal inoculation on three occasions. This evidence and that obtained by studies of the men involved in the pneumonitis epidemic indicates that the epidemic was caused by *H. capsulatum.*

LOOSLI, C. G., GRAYSTON, J. T., ALEXANDER, E. R. & TANZI, F. (1952). **Epidemiological studies of pulmonary histoplasmosis in a farm family**—*Amer. J. Hyg.* **55,** 392-401. [Abst. from authors' summary.] 383

The authors reported further work on the epidemiology of *H. capsulatum* infection of the lungs in a farming family [see *V.B.* **22,** 2766]. Three other members of the same family had clinically inapparent infections with minimal pulmonary involvement.

Histoplasmin skin tests on two cats and a rabbit from the farm, followed by P.M. examination and culture yielded negative results. Although not extensively studied, the role of animal carriers was considered unimportant in the epidemiology of the pulmonary infections in this family. On the other hand, the inhalation of dust containing the fungus, which was probably leading a saprophytic existence in the soil of a silo, was considered to have been the important mechanism of acquiring the infections.

WÜNSCHE, K. (1952). Penicillium, eine Sterilitätsursache beim Rind? **[*Penicillium,* a possible cause of sterility in cattle.]**—*Wien.*

tierärztl. Mschr. **39**, 476-480. [English, French and Italian summaries.] 384

Spores of a mould, considered to be a species of *Penicillium,* were found in films from the genital mucosa of three bulls with normal semen but low fertility and in vaginal or cervical films in 25 of 38 cows with irregular conception; some of these cows were clinically normal, others had a catarrhal vaginitis. The organism produced a mycelium when mucus which contained spores was incubated in slide cultures for 4–5 days at room temperature. A healthy cow injected intracervically with a culture of the mould failed to conceive and had an exudate which was rich in spores and yielded a culture of the organism. It is suggested that the mould may play a part in producing infertility, perhaps along with other factors, such as granular vaginitis.—E. G. White.

Pillsbury, D. M. & Kligman, A. M. (1951). **A new histochemical tool for the definitive diagnosis of fungus infections.**—*Trans. N.Y. Acad. Sci.* Ser. II. **13**, 145-148. 385

Fungoid cell walls contain chitin and cellulose which are broken down by periodic acid to liberate aldehydes: these will reconstitute colourless leucofuchsin (basic fuchsin and sulphurous acid) to stain fungus cells red. This technique is superior to older methods and by its use small portions of infected tissue can easily be found in scrapings or tissue sections.

—John Seamer.

Sheriff, D. & Piercy, S. E. (1952). **Experiments with an avianised strain of the organism of contagious bovine pleuropneumonia.**—*Vet. Rec.* **64**, 615-621. [Authors' summary modified.] 386

The authors found that strains of the bovine contagious pleuro-pneumonia organism can be grown in embryonated eggs without difficulty. With the strain used (Tl), cattle were immunized successfully after nine egg passages by subcutaneous inoculations which were rarely followed by undesirable local reactions. Using a dose of 1·0 ml. of egg material, 20–40% of cattle developed local reactions, but further work, which will be published later, has shown that this dose can be reduced to a point at which local reactions are almost entirely absent whilst immunizing value is not impaired. Higher dilutions may result in a slowly developing and generally low grade immunity. Within these extremes a high grade and uniform immunity can be established within 28 days with few local reactions. Provided the keeping qualities of dried vaccine prove to be satisfactory, it should be possible to select, by animal titration, a dose adequate to meet these requirements whilst allowing a safe margin of immunizing doses to cover any variation in the susceptibility of cattle.

Gebauer, H. (1952). Puerperalseptikämie beim Schwein. **[Puerperal septicaemia in pigs.]**—*Mh. VetMed.* **7**, 125-128. 387

An account of observations of 44 cases of puerperal septicaemia in a herd of about 3,000 pigs. The author concluded that the condition is usually associated with mastitis, the cause of which, he suggested, is usually mixed. No bacteriological work was undertaken.

—A. Mayr-Harting.

I. Smith, H. (1950). **The virulence-enhancing factor of mucins. II. Fractionation studies on hog gastric mucin.**—*Biochem. J.* **46**, 356-363. [For part I, see *V.B.* **20**, 3424.] 388

II. Smith, H. (1951). **The virulence-enhancing factor of mucins. III. Further fractionation of hog gastric mucin; an additional factor in the adjuvant action.**—*Ibid.* **48**, 441-447. 389

III. Smith, H., Harris-Smith, P. W. & Stanley, J. L. (1951). **The virulence-enhancing factor of mucins. IV. The role of particulate insoluble matter and a viscous medium in virulence enhancement, with a revised assay of the third factor involved.**—*Ibid.* **50**, 211-215. 390

IV. Smith, H., Gallop, R. C. & Stanley, J. L. (1952). **The virulence-enhancing factor of mucins. V. The different components of the 'third factor' involved in virulence enhancement.**—*Ibid.* **52**, 15-22. 391

V. Smith, H., Gallop, R. C., Harris-Smith, P. W. & Stanley, J. L. (1952). **The virulence-enhancing factor of mucins. VI. Identification of a heparin as the main component of the third factor involved in virulence enhancement.** — *Ibid.* **52**, 23-29. [Authors' summaries modified.] 392

I. Preliminary fractionations have been carried out on preparations from fresh hog stomach linings for a factor responsible for the virulence-enhancing power for bacteria.

Crude blood-group substance prepared by autolysis had virulence-enhancing activity which, in the same samples, did not run parallel with the blood-group activity.

Dialysis at 0°C. at pH 4·2 separated a small amount of active insoluble material from inactive soluble blood-group mucoid; the latter was precipitated in a semi-pure state by ethanol. More of this active material was prepared directly from fresh linings and further purified.

The still heterogeneous active material contained nitrogen (Dumas) 14·5, 13·5%; in aqueous suspensions, which were non-viscous, different batches consistently had activities 7–9 times those of the crude blood-group substance.

This activity, however, was increased three- to fourfold when suspended in a completely inactive 3·5% (weight for volume) solution of semi-pure blood-group substance, which imparts a marked viscosity to the suspension. This viscosity was of the same order as that of the original active crude blood-group substance solution; a concentration of activity of 25–30 times is therefore implied.

The same marked increase in activity was produced by suspending the active material in tragacanth and agar solutions to give suspensions with approximately the same viscosity at 37°C. as the above.

The virulence-enhancing power of hog gastric mucin is due to a virulence-enhancing factor which is active alone, but manifests its full activity only when in combination with a second inert factor or factors, which may well act by providing a viscous medium for its suspension.

II. S. described a modified method for the biological assay of virulence-enhancing activity, using a medium of standard viscosity for all solutions injected.

The virulence-enhancing factor, when further purified from insoluble material, was of predominantly peptide nature, but a small proportion of carbohydrate residues was present. The material was still heterogeneous by ultracentrifugal analysis.

The insoluble residue separated from the virulence-enhancing fraction had an adjuvant action on the activity of the latter, in addition to that due to the viscosity of the original mucin. The same adjuvant action was shown by known adsorbents, namely activated charcoal, kaolin, fuller's earth and talc.

S. discussed the nature of this second adjuvant action.

The activity of the specific virulence-enhancing factor is fully manifested only when in association with other non-specific physical factors.

III. Insoluble particulate matter and a viscous medium, alone and combined, enhance the virulence of *S. typhi* for mice.

The activity of hog gastric mucin is due to a synergic action between a particulate residue, a viscous medium and a more specific third factor.

The biological assay of samples of the third factor has been revised in the light of this knowledge. It can detect with probability, $P = 0{\cdot}95$, a difference in activity of two to two and a half times, using the weighted mean of duplicate assays.

IV. The virulence-enhancing activity of the third factor of hog gastric mucin resides in at least two predominantly polysaccharide fractions.

These fractions differ in chemical nature and in some biological properties. The first, which has been purified and identified [see V (*infra*)], contains highly ionic sulphate residues and has an intense anticoagulatory and anticomplementary activity; the second fraction, which is still impure, is devoid of such residues and activities. When combined together in the biological assay for the third factor the two fractions have a synergic effect.

Various bacterial polysaccharides have virulence-enhancing activities and other biological properties similar to the second of these fractions.

V. The main component of the third factor involved in the virulence-enhancing action of hog gastric mucin was obtained essentially homogenous as judged by electrophoresis, ultracentrifugation and fractional solubility. It was identified as a heparin by its chemical and biological properties. This is the first isolation of a heparin mucoitin disulphuric acid from crude hog gastric mucin obtained from whole hog mucosae.

The authors discussed the signficance of these findings.

AUSTRIAN, R. (1952). **Bacterial transformation reactions.**—*Bact. Rev.* **16**, 31-50. 393

The author reviewed factors concerned with bacterial transformation, with particular reference to *Streptococcus pneumoniae, Haemophilus influenzae, Bact. coli* and *Shigella paradysenteriae*.—A. H. LINTON.

MILLAR, R. (1952). **Observations on the bacterial flora of the vulvo-vaginal tract of mares.** —*Aust. vet. J.* **28**, 171-173. 394

Results of the clinical and bacteriological examination of the genital organs of 17 infected barren mares and of ten pregnant mares were recorded. The most severe lesions were associated with the presence of *Bact. coli* rather than with streptococci or staphylococci.

—D. F. STEWART.

See also absts. **521** (periodic ophthalmia); **532** ("sealer's finger"); **538** (report, Jamaica); **539** (report, Indonesia); **540** (report, U.S.A.); **542** (book, bacteriology).

DISEASES CAUSED BY PROTOZOAN PARASITES

JEZIERSKI, A. (1951). **Prophylactic and therapeutic action of antrycide in *Trypanosoma congolense* and *vivax* trypanosomiasis.**—*Bull. Bur. interafr. Tsetse.* B.P.I.T.T. No. 152/T. pp. 6. [Mimeographed.] 395

J. reported the results of experiments using antrycide methylsulphate and antrycide "prosalt" (a mixture of the methylsulphate and the chloride) in the prophylaxis and treatment of *T. congolense* and *T. vivax* infections in cattle, sheep and goats. He claimed very good results in all cases.—J.D.

HERIN, V. (1952). **The evolution of trypanosomiasis in bovines after treatment with "dimidium bromide".**—*Bull. Bur. interafr. Tsetse.* B.P.I.T.T. No. 188/T. pp. 8. 396

After unsuccessful treatment with dimidium bromide, cattle seem to be much more susceptible to *T. congolense* infection, which causes death very easily, than to *T. vivax*, which produces more relapses.

In animals in a deficient state of health, in pregnancy or lactation the prognosis is bad.
—J.D.

COSAR, C., NINET, L., PINNERT-SINDICO, S. & PREUD'HOMME, J. (1952). Activité trypanocide d'un antibiotique produit par un streptomyces. **[Trypanocidal action of a *Streptomyces* product.]**—*C. R. Acad. Sci., Paris.* **234,** 1498-1499. 397

The substance, $C_{10}H_{21}O_3N_5HCl$, was injected subcutaneously (0·15 g. per kg.) into mice already infected with *T. congolense*. All the controls died while in only one of the eight test mice was there any evidence (one parasite per 100 fields) of trypanosomes. Halving the dose produced cure in six out of eight mice.
—JAS. G. O'SULLIVAN.

BROCHART, M. (1952). Sur quelques éléments de diagnostic indirect de la trichomonose chez le taureau. **[Diagnosis of trichomoniasis in bulls.]**—*Bull. Acad. vét. Fr.* **25,** 129-132. 398

B. found that diagnosis of trichomoniasis in bulls could be made by examination of epithelial cells in preputial washings, percentage fertility, and records of cows returning to service.—JAS. G. O'SULLIVAN.

FLORENT, A. & GRUSLIN, G. (1952). Du traitement et de la prophylaxie de la trichomoniase du bétail. Echec du traitement de Hess.—Efficacité de la méthode préventive de Söntgen. **[Treatment and prevention of bovine trichomoniasis.]**—*Ann. Méd. vét.* **96,** 199-208. 399

The method of treatment of trichomoniasis in bulls described by Hess [*V.B.* **21,** 62] consisting of atomization under pressure of hydrogen peroxide solution was carried out on two bulls without success. The method of prophylaxis described by Söntgen applying a 5% trypaflavine ointment to the vulva and vestibulum before coitus was successful.
—M. L. CLARKE.

HOLZ, J. (1952). Zur Behandlung der Trichomonadenseuche des Rindes. **[Treatment of trichomoniasis in cattle.]**—*Tierärztl. Umsch.* **7,** 196-198. 400

H. briefly reviewed the literature on the localization of *Tr. foetus* in the pregnant and non-pregnant female and bull, and the treatment used, and gave the results of *in vitro* testing of 42 different agents against trichomonads in pure culture. As a result he recommended intravenous injection of iodine preparations in addition to the usual local treatment.
—M. L. CLARKE.

TOPOLNIK, E. & HAJSIG, M. (1952). Hemaglutinacija protozoa Trichomonas genitalis. **[Haemagglutination by *Trichomonas foetus*.]**—*Vet. Archiv.* **22,** 66-68. [French and German summaries. Abst. from French summary.] 401

A number of strains of *Trichomonas* agglutinated red cells but haemagglutination was not inhibited by serum from two chronically affected cows, nor by hyperimmune serum from rabbits.—JAS. G. O'SULLIVAN.

MCGREGOR, J. K. (1952). **Studies on the use of 2-amino-5-nitrothiazole in the control of enterohepatitis (blackhead) in turkeys.**—*Amer. J. vet. Res.* **13,** 108-109. [Abst. from author's summary.] 402

2-Amino-5-nitrothiazole used as a curative treatment in artificially established enzootics of enterohepatitis had some activity, especially when given in successive concentrations of 0·2% for three days, 0·1% for seven days, and 0·05% continuously thereafter in the feed.

Used in a soluble form as a curative treatment, the drug did not prove markedly effective in stopping a severe outbreak of entrohepatitis, under the conditions of this experiment.

BERKS, G. & NEAL, R. A. (1952). **The effect of some drugs upon *Histomonas meleagridis in vitro*.**—*Ann. trop. Med. Parasit.* **46,** 68-71. [Abst. from authors' summary.] 403

The *in vitro* activity of enheptin-T, vioform, tryparsamide, acetarsol, penicillin and streptomycin against a strain of *H. meleagridis* was determined. Direct histomonicidal activity was demonstrated with enheptin-T and vioform. Acetarsol, tryparsamide, penicillin and streptomycin were inactive *in vitro*.

SUPPERER, R. (1952). Über die Lambliose (Giardiose) des Rindes. [*Giardia bovis* **infection in cattle.**]—*Wien. tierärztl. Mschr.* **39,** 26-29. [English, French and Italian summaries.] **404**

G. bovis were found in large numbers in the faeces of a calf, particularly in the masses of mucus covering the faeces; both vegetative forms with eight flagella and cysts were present. The organisms had caused enteritis.

—A. MAYR-HARTING.

DAVIS, L. R. & BOWMAN, G. W. (1951). **Coccidiosis in cattle.**—*Proc. 55th Ann. Meet. U.S. live Stk sanit. Ass.* 39-50. [Authors' summary slightly modified.] **405**

Coccidiosis causes more damage in cattle than is usually believed. The symptoms of coccidiosis include straining, diarrhoea, loss of weight, weakness and passing of blood and mucus. Sometimes deaths may occur without bloody diarrhoea.

A study of oocysts in 20 naturally infected calves, until they reached the age of 90 days, revealed nine species of coccidia. The earliest appearance of oocysts was when the calves were 14 days old.

The incubation period of *Eimeria zurnii*, responsible for heavy losses in cattle, was found to be 16 to 30 days, with peaks of discharge of oocysts at 19 and 20 days.

In two controlled experiments comparing sulfamethazine and sulfaquinoxaline, sulfamethazine gave more protection than sulfaquinoxaline. Calves receiving sulfamethazine produced fewer oocysts, showed less diarrhoea and blood, and gained more weight than comparable calves given sulfaquinoxaline.

Portable isolation pens which are moved to a fresh site once each week are recommended for reducing death losses from coccidiosis and other diseases of calves.

FARR, M. M. & WEHR, E. E. (1952). *Eimeria truncata* **associated with morbidity and death of domestic goslings.**—*Cornell Vet.* **42,** 185-187. **406**

Two survivors of 13 goslings were killed and large numbers of gametocytes and oocysts of *E. truncata* were found in the kidney. In the absence of any test for viral disease, the protozoan was considered to be probably the principal cause of mortality in the flock.

—JAS. G. O'SULLIVAN.

HSU, D. Y. M. & GEIMAN, Q. M. (1952). **Synergistic effect of** *Haemobartonella muris* **on** *Plasmodium berghei* **in white rats.**—*Amer. J. trop. Med. Hyg.* **1,** 747-760. [Abst. from authors' summary.] **407**

Albino rats are the most satisfactory experimental hosts for high percentages of parasites in intact red cells. The presence of extracellular *Pl. berghei* continuously in white mice makes quantitative studies difficult.

An inoculum of 60 million parasites per kg. body weight gives the most consistent incubation period and course of infection.

Differences in age affect the course of *Pl. berghei* infection in white rats. Younger rats under 100 g. develop higher rates of parasitaemia, while older rats either die with lower rates of parasitaemia or control infection by acquiring immunity.

Pl. berghei activates latent haemobartonellosis in white rats, causing intense infection with *Bartonella muris*. The degree of polychromatophilia induced by *B. muris* results in higher rates of parasitaemia with *Pl. berghei*, a peak of 191% being recorded.

Infection with *Pl. berghei* in *Bartonella*-free rats reveals a shorter incubation period, a lower percentage of polychromatophilic erythrocytes, and the occurrence of death before acute anaemia develops.

NARDI, E. & LO MUZIO, F. (1952). La piroplasmosi suina in Puglia. [**Piroplasmosis in swine in Italy.**]—*Zooprofilassi.* **7,** 115-120. [English, French and Spanish summaries.] **408**

Porcine piroplasmosis appears to be fairly common in Italy. Of 30 outbreaks investigated by Puglia, 29 were attributed to *Babesia perroncitoi* and one to *B. trautmanni*. *Rhipicephalus sanguineus* was the only arthropod found, though no detailed work was done on the means of transmission of the disease.—J. T. DONE.

GRIMPRET, J. (1952). Valeur et indication des différents traitements de la theileriose bovine. [**Treatment of bovine theileriasis.**]—*Bull. Acad. vét. Fr.* **25,** 133-136. **409**

G. recommended trypaflavine, pentamidine (diamidino-diphenoxypentane), nivaquine (a quinoline derivative) and blood transfusion in various combinations.—JAS. G. O'SULLIVAN.

WESTPHAL, A. & PALM, G. (1952). Fehlerquellen des direkten Parasitennachweises bei

Toxoplasmainfektionen. **[Sources of error in the microscopic diagnosis of toxoplasmosis.]** —*Z. Tropenmed. u. Parasit,* 3, 486-492. [Abst. from English abstract.] 410

Microscopic search for toxoplasm cells in spinal fluid or tissue smears is subject to fallacies. Giemsa-stained slides often reveal toxoplasm-like bodies of blue protoplasm and red nuclear substance. When decolorized and treated with Gram stain these bodies prove Gram-positive, hence they cannot be protozoa and must be considered fungoid organisms, particularly yeast cells. Also Gram-negative forms resembling toxoplasms are not necessarily protozoan unless their nuclear structure denotes them as such.

In order to reduce the likelihood of mistaking yeast cells for toxoplasms, fresh spinal fluid should be centrifuged; the sediment obtained should be spread in thin smears, dried rapidly and fixed with methyl alcohol. This procedure leaves the structure of toxoplasm bodies almost undamaged and sufficiently clear to warrant exact diagnossis.

Sedimentation without centrifuging and slow desiccation of thick drops, as recommended by Horst and Franke in order to preserve structural details, favours contamination with fungus cells and may lead to erroneous findings.

See also abst. 540 (report, U.S.A.).

CALLOT, J. & PUECH, J. (1952). Toxoplasmose du rat blanc. **[Toxoplasmosis in the white rat.]**—*Ann. Parasit. hum. comp.* 27, 51-55. 411

With the strain of *Toxoplasma* used, rats were only slightly affected and it was not possible to preserve the strain in this animal.

—JAS. G. O'SULLIVAN.

BAUER, F. (1952). Toxoplasma gondii. Untersuchungen über Widerstandsfähigkeit gegen physikalische und chemische Einflüsse. **[Research on the resistance of *Toxoplasma gondii.*]**—*Z. Tropenmed. u. Parasit.* 3, 497-499. [Abst. from English abst.] 412

Resistance of *T. gondii* against heat, cold and disinfectants was tested in saline rinsings from the peritoneal cavity of toxoplasm-infected mice. It was found that toxoplasm cells do not survive when heated 60°C. for 10 min. or when left at 4°C. for 14 days. Boiling kills them immediately, also some modern disinfectants, while formalin, alcohol, phenol and other disinfectants in standard dilutions take 1–20 min. to kill.

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

DEMNITZ, A. & SCHNEIDER, B. (1951). Boebachtungen über die Typenumwandlung bei der Maul- und Klauenseuche. **[Mutation of foot and mouth disease virus from Type O to Type C.]**—*Mh. prakt. Tierheilk.* 3, 257-262. 413

Sometimes during an epidemic a new type appears, particularly in an area where most animals have acquired immunity, and no source of it can be found. The virus seems to be very stable in its antigenic structure so that hitherto such events have not been explained as mutations. In a series of young animals that were being hyperimmunized with Types A and O, one developed fever and a primary lesion on the tongue after the 23rd intralingual injection. Type C virus was isolated from the lesion; this type had not been found in Germany since 1940, but was reported a few days after the case here presented from another part of Germany. This, and an examination of types occurring in the epidemics 1948-49 and 1950-51, gives reason to assume that type mutations occur *in vivo* under certain conditions.—A. MAYR-HARTING.

DEDIÉ, K. (1950). Beitrag zur Züchtung des Virus der Maul- und Klauenseuche im bebrüteten Hühnerei. **[Cultivation of the virus of foot and mouth disease in chick embryos.]** —*Exp. Vet.-Med.* 1. 14-23. 414

Of the three standard strains, adapted to the g. pig, only type A could be propagated on the chick embryo. Serologically it has remained identical with the standard strain A. Even after 120 egg passages the titre of virus in the egg remains low and, probably for this reason, causes only a mild disease when transmitted back to the g. pig.—A. MAYR-HARTING.

SKINNER, H. H., HENDERSON, W. M. & BROOKSBY, J. B. (1952). **Use of unweaned white mice in foot-and-mouth disease research.** [Correspondence.]—*Nature, Lond.* 169, 794-795. 415

The authors outlined recent work with unweaned white mice including: comparative infectivity titrations, transferance of maternal immunity, comparative tests for estimating the neutralization power of convalescent cattle serum, the study of antigenic differences between two strains of C virus, and the use of white mice as a source of virus in vaccine production.

—G. V. LAUGIER.

García Pirazzi, A. J. & Aramburu, H. G. (1951). La differenciación de la fiebre aftosa y la estomatitis vesicular por medio de la fijación del complemento. **[Differential diagnosis of foot and mouth disease and vesicular stomatitis by complement fixation.]**—*Gac. Vet., B. Aires.* **13,** 196-202. [English summary.] **416**

The authors briefly discussed the literature and described the technique of the complement-fixation test. The two viruses can be reliably differentiated by the test. Three strains of vesicular stomatitis virus from Venezuela could be differentiated into two types by this method. —J. Edwards.

Adutskevich, V. A. (1951). **[A method of P.M. diagnosis of rabies.]**—*Veterinariya, Moscow.* **28,** No. 11. pp. 32-34. **417**

In the author's experience Negri bodies were absent from the hippocampus in 20 out of 164 cases. In these 20 cases they were present in the cerebellum and the medulla oblongata, the site being chiefly in the cerebellum in ruminants and omnivorous animals, and in the medulla oblongata in dogs with the paralytic type of rabies. The author's method is to examine all three localities, because during the initial three days of the clinical disease Negri bodies are more likely to be found in the cerebellum and the medulla oblongata than in the hippocampus. He described the technique of preparing the material which takes 1–2 hours. —F.A.A.

Bhatia, H. M. & Mehta, M. L. (1951). **Glycosuria in rabies due to fixed virus.**—*Indian vet. J.* **28.** 176-179. **418**

Three out of 45 samples of urine collected from sheep experimentally infected with rabies fixed virus were found on qualitative analysis to contain sugar.—K. C. Sinha.

Koprowski, H., van der Scheer, J. & Black, J. (1950). **Use of hyperimmune anti-rabies serum concentrates in experimental rabies.**—*Amer. J. Med.* **8,** 412-420. [Abst. from abst. in *Trop. Dis. Bull.* **49,** 507-508. (1952).] **419**

Rabbit or sheep hyperimmune serum was obtained by repeated injections with Flury strain chick embryo virus and brain tissue infected with fixed rabies virus. The gamma-globulin fraction of the serum was concentrated by either sodium sulphate or methanol precipitation and adjusted to 7% protein content.

A street virus was used for challenge purposes. The intramasseter route of injection in hamsters gave comparable results to mice injected intracerebrally. Two-fold dilutions of 1 ml. antiserum concentrate given subcutaneously to hamsters 24 hours *after* challenge with 40 LD_{50} gave a PD_{50} [PD = preventive dose] titre at 1/24 serum dilution. Phenolized vaccine given daily for 14 days, commencing 24 hours after challenge, afforded no protection whatsoever. Undiluted serum, given as late as 72 hours post-infectiously, still protected 50% of the hamsters. Additional vaccination seemed to exert neither a favourable nor a detrimental effect.

In g. pigs the serum again showed good protection, while vaccine alone showed none. Serum and vaccine treatment combined seemed somewhat superior to serum alone.

Calculation on a weight-protective value basis led to a preliminary recommendation of 0·5 ml. per kg. body weight for human use. Twenty human beings, 7 of whom could be proved to have been exposed to rabies, have so far been successfully treated with antiserum. All of them but one were also given subsequently some kind of vaccine treatment.

Deshmukh, P. L. (1949). **Clinical hydrophobia without contact with rabies-transmitting animal.**—*Indian med. Gaz.* **84,** 546-548. **420**

D. recorded two cases in which the patients showed typical hydrophobic phenomenon although there was no evidence of contact with a rabies-transmitting animal or of a bite or licking by rabid animals. He attributed these cases to either (1) air-borne infection, (2) contact with a dry infected article, (3) contact with or ingestion of infected water. The first two sources were excluded owing to the fragile character of the virus in the tropics. D. attached importance to the third factor as the virus might remain unattenuated for a long time in water infected with saliva from a rabid animal and its implantation may take place through any breach in the skin or mucous surface of the mouth or nose.

Further research is indicated on the possibility of "water-borne" infection with special reference to the existence of "carrier" animals. —S. K. Chaudhry.

D'Silva, C. B., Brooks, A. G., Thomas, A. K. & Ahuja, M. L. (1952). **Studies on rabies. V. Antirabic vaccines prepared from supernatant fluid of brain emulsion in distilled water.**—*Indian J. med. Res.* **39,** 423-431. [Authors' summary slightly modified.] **421**

Vaccine made from supernatant fluid of a brain emulsion in distilled water proved as effective as vaccine made from whole brain. Supernatant vaccine appears to evoke quicker

immunity response in laboratory animals than vaccine made with whole brain. A supernatant vaccine made from brain emulsion in saline is of no value. A carbolized supernatant vaccine in distilled water is likely to prove a great advance over vaccines in use at present, as it affords good protection, the virus in the vaccine is inactivated and brain substance reduced to a minimum.

KOPROWSKI, H. (1952). **Immunization with modified living virus with particular reference to rabies and hog cholera.**—*Vet. Med.* **47,** 144-150 & 154. 422

K. discussed the common properties and common differences of living viruses modified either in nature or by man. Although a rational approach is necessary in planning an attack on adaptive modification of a viral pathogen, it should always be borne in mind that any number of attempts using all past experience may end in frank failure if good fortune does not accompany the search.

K. mentioned the 11 viruses used on a large scale in either human or veterinary preventive medicine. In only a few viral diseases is it possible to immunize with properly inactivated agents. Protection by killed vaccine is only of a transient type and repeated vaccination may be required.

Several of these diseases were chosen for brief discussion as to their history, characteristics and duration of immunity following vaccination. Rabies and swine fever vaccines were discussed in more detail. One of the difficulties in producing satisfactory vaccines in virus disease is the multiplicity of strains.

A bibliography of 35 references is included.

—D. S. RABAGLIATI.

SMITH, W. (1952). **The structural and functional plasticity of influenza virus.**—*Lancet.* **262,** 885-891. 423

Antigenic changes occur frequently during laboratory adaptations of viruses to new host species. S. mentioned the unique behaviour of strain HAL, outlined the elementary facts of influenza virus haemagglutination and described spontaneous mutation affecting haemagglutination behaviour and the mechanism of the Francis phenomenon. He suggested that host protein is an integral part of the virus unit, and that virus multiplication is based on the independent replication of sub-units, followed by their aggregation into the pattern of the fully formed, infective elementary body.

—W. R. BETT.

BURNET, F. M. (1952). **Irreversible binding of influenza virus to the red cell surface.**—*Aust. J. exp. Biol. med. Sci.* **30,** 119-128. [Author's summary copied *verbatim.*] 424

When fowl erythrocytes are treated with indicator viruses H.LEE and T.MEL for some time at 37°C. a proportion of the virus becomes irreversibly attached to the cell surface. This can be demonstrated by three techniques: (a) the capacity of the cells to agglutinate normal cells; (b) agglutination of treated cells with soluble inhibitors, and (c) agglutination by immune serum previously treated with RDE. The phenomenon is not shown with active viruses nor with human red cells.

EATON, M. D., PERRY, M. E., LEVENSON, C. G. & GOCKE, I. M. (1952). **Studies on the mode of action of aromatic diamidines on influenza and mumps virus in tissue culture.** — *J. Immunol.* **68,** 321-334. 425

Diamidines, at concentrations inhibitory to the growth of mumps and influenza viruses, inhibit the growth potential, retard the oxygen consumption, and produce a relative increase in aerobic glycolysis of chorio-allantoic tissue cultures. The inhibition of the virus growth which is reversible, probably results from interference with synthetic processes of the host cell and is not the direct consequence of cell damage.

—A. ACKROYD.

FINDLAY, G. M. & HOWARD, E. M. (1952). **The susceptibility of rats to Rift Valley fever in relation to age.**—*Ann. trop. Med. Parasit.* **46,** 33-37. [Abst. from authors' summary.] 426

Adult rats, fed on a complete diet, are resistant to intraperitoneal injection with the hepatotropic strain of Rift Valley fever virus in mouse blood or liver, but unweaned rats up to 15 days of age are susceptible. Complete necrosis takes place in the livers of infected unweaned rats.

Both adult and unweaned rats are susceptible to the intracerebral injection of neurotropic Rift Valley fever virus, but, whereas adult rats do not develop encephalitis after intraperitoneal injection of the neurotropic strain, unweaned rats do so. The mechanisms at work are briefly discussed.

MILES, J. A. R. (1952). **An encephalitis virus isolated in South Australia. I. Some characteristics of the virus.**—*Aust. J. exp. Biol. med. Sci.* **30,** 341-351. [Abst. from author's summary.] 427

MILES, J. A. R. & HOWES, D. W. (1952). **An encephalitis virus isolated in South Australia. II. Serological observations on the virus and**

its relation to other arthropod-borne encephalitides.—*Ibid.* 353-362. [Abst. from authors' summary.] **428**

I. Monkeys, mice, horses, lambs, silver gulls (*Larus novo-hollandiae*), unweaned rats and young chicks have been shown to develop clinical disease after intracerebral inoculation with a virus isolated from a fatal human case of encephalitis occurring in South Australia.

In rabbits, g. pigs, weaned rats, pigeons and adult fowls no clinical disease has been observed, but the evidence suggests that the virus can multiply in these animals.

Brush tailed opossums (*Trichosurus vulpecula*) and a kangaroo appeared to be completely insusceptible and sheep were insusceptible to peripheral inoculation.

The embryonated hen's egg was susceptible to inoculation by the yolk sac and the chorio-allantoic routes.

The virus survived heating to 51°C. for 30 min., but not heating to 56°C. for 15 min.

Filtration experiments suggest a particle size for the virus between 20–50 mμ.

II. Serological investigations on the strain of encephalitis virus isolated in South Australia [I. *supra*] revealed that this virus is related to members of the Japanese B. group of viruses, but not identical with any of the previously recognised members. The authors presented evidence to show that it is identical with the Murray Valley encephalitis virus.

In the g. pig and the horse, complement-fixing antibodies to this virus are more rapidly produced than neutralizing antibodies and in the horse neutralizing antibodies are more enduring than complement-fixing antibodies. Field investigation on human and horse sera yielded twice as many positive neutralization as complement-fixation tests. This difference is likely to be due to the more enduring character of the neutralizing antibody.

MACDONALD, F. (1952). **Murray Valley encephalitis infection in the laboratory mouse. I. Influence of age on susceptibility to infection. II. Multiplication of virus inoculated intramuscularly.**—*Aust. J. exp. Biol. med. Sci.* **30,** 319-324 & 325-332. [Author's summaries modified.] **429**

I. The susceptibility of mice to infection with MVE virus was tested at ages from 5 to 28 days. A group of old (280-day) mice was also studied.

Unweaned mice are infected intracerebrally with smaller doses of virus than are required for older mice. After peripheral inoculation, fatal encephalitis ensues much more readily in the younger mice, the main change in susceptibility to infection taking place between 17 and 28 days of age.

II. The virus concentration of various tissues following intramuscular inoculation of MVE, was studied in unweaned and in four-week-old mice. In unweaned mice, early and extensive multiplication occurs in the inoculated muscle, and a marked viraemia develops which precedes active multiplication in the central nervous system. There is no evidence for or against multiplication in several other tissues.

In four-week-old mice, local multiplication and viraemia are at a much lower level, and invasion of the central nervous system does not occur.

SCHULTZE, E. (1950). La encefalomielitis equina. **[Equine encephalomyelitis.]**—*Rev. Fac. med. Vet. Zootec.* **19,** 235-244. **430**

A general and historical account of equine encephalomyelitis with consideration to identical or similar diseases which occur in South America. The literature was reviewed systematically and concisely.—J. EDWARDS.

DULBECCO, R. (1952). **Plaques produced on a monolayer tissue culture by single particles of an animal virus.** — *Science.* **115,** 481-482. [Only abst. given. Abst. copied *verbatim.*] **431**

Plaque formation by single virus particles is the basis for the analytical techniques used in the study of bacterial viruses. This has now been obtained with an animal virus, the virus of Western equine encephalomyelitis growing on chicken fibroblasts. This phenomenon may serve for the development of an animal virus assay much superior to any other assay now in use, and for the isolation of the progeny of single virus particles.

Virus plaques are produced on a continuous fibroblastic layer grown on the bottom of a glass flask of the size of a Petri dish. A continuous cell layer is first grown in two days, following a technique devised by W. R. Earle, and when the virus is applied on it easily detectable round necrotic areas are produced within two or three days of subsequent incubation. The number of plaques produced by two different dilutions of the same virus sample is proportional to the concentration of the virus; hence a plaque is produced by a single virus particle. The comparison between the number of plaques produced and the fraction of chicken embryos infected by the same virus sample indicates that all or nearly all virus particles able to infect the embryo produce a plaque. There is

therefore a 1:1 relation between infecting particles and plaques.

Plaque production is technically simple and reproducible. Experiments are under way in which this phenomenon is applied to a detailed analysis of this virus-host system.

KRAUSS, S. (1951). Enzootia niedokrwistości zakaźnej w P.S.O. Sieraków—z uwzględnieniem wpłwów środowiska. [**Equine infectious anaemia in Poland.**]—*Polsk. Arch. Weteryn.* **1,** 257-278. 432

Equine infectious anaemia was introduced into a stud by a stallion with a latent form of the disease. Clinically infected and "in-contact" animals were removed and 18 months later the stud was declared free from infection. The outbreak was confined to a very few animals owing to the immediate removal of infected animals and to good hygiene and feeding. K. considers that resistance can be increased by the use of sex hormones.

—J. R. MITCHELL.

STEIN, C. D. & GATES, D. W. (1952). **A further note on the action of phenol on virus of equine infectious anemia.**—*Amer. J. vet. Res.* **13,** 195-197. 433

Infective blood serum from cases of equine infectious anaemia containing 0·5% phenol was virulent after 30 days, but not after 92 days. The inactivated 92 day old sample did not immunize.

VERGE, J., LUCAS, A., CAUCHY, L., ANDRAL, L. & PARAF, A. (1952). Recherches sur l'avortement à virus des juments. [**Virus abortion in mares in France.**]—*Rec. Méd. vét.* **128,** 197-205. 434

The authors gave a detailed account of an outbreak of virus abortion in a group of 15 mares, including symptoms, lesions and histological findings. Experimental transmission to healthy mares was successful. Administration of immune serum only retarded the abortion time. The authors described a vaccine which they prepared; the results of its use are not yet known.—G. V. LAUGIER.

PELLEGRINI, D. & GUARINI, G. (1952). Mise en évidence d'anticorps fixateurs, dans le sérum d'animaux immunisés contre la peste bovine, avec la méthode de la fixation du complément modifiée. Note préliminaire. [**Complement fixation in rinderpest using a modified technique.**]—*Bull. Off. int. Epiz.* **37,** 233-237. 435

The gastric mucosa and the mesenteric and prescapular lymph nodes were removed from experimentally infected animals at the height of the fever, minced, ground in sterile sand, suspended in Soerensen's solution and the suspension centrifuged. The supernatant fluid, inactivated at 57°C., provided the stock antigen, being diluted with physiological saline when required. Test sera were inactivated by diluting them with 1·5% aqueous sodium chloride and holding at room temperature for 30 min. These are the essential details of what is otherwise the haemolytic complement-fixation test.

Lower titres were obtained from vaccinated animals than from cattle which had recovered from the disease. Negative results were invariably obtained from animals which had never been in contact with rinderpest. Apart from its usefulness in import control, the authors stress the importance of this modified test as a research tool.—L. M. MARKSON.

BENSON, D. V. (1952). **The value of inclusion bodies in the diagnosis of hog cholera.**—*Amer. J. vet. Res.* **13,** 304-308. [Author's summary modified.] 436

Inclusion bodies were not found in any of the tissues studied and, therefore, were not considered to be of any value in diagnosing swine fever. Gall bladder smears of diseased swine showed cell changes not found in normal swine. The cell changes observed were not specific for swine fever; therefore they could not be used as a diagnostic aid. More cellular detail was observed in smears from the gall bladder epithelium than in sections, athough the same staining techniques were used.

ANON. (1952). **A further report on survey of the new hog cholera vaccines.**—*J. Amer. vet. med. Ass.* **121,** 51-52. 437

An analysis of the replies sent in by 151 practising veterinary surgeons to a questionnaire on results obtained with the lapinized swine fever vaccines.

Using either of the two vaccines administered without serum, 51,996 pigs in 719 herds were vaccinated, of which 1,415 (2·72%) sickened during the "reaction" period and 344 (0·6%) died.

Using a third strain of lapinized virus with serum, 62,310 pigs in 905 herds were vaccinated with a morbidity of 0·57% and a mortality of 0·1%.

Although the overall mortality figures would appear to be low, losses, when they occur, may be high when considered on a herd basis.

—J. T. DONE.

KOPROWSKI, H. (1952). **[Swine fever vaccines.]** [Correspondence.]—*J. Amer. vet. med. Ass.* **121,** No. 904. pp. 48, 53 & 54 of advts. **438**

In a five-month survey of 940 herds in which 59,404 pigs were vaccinated with the lapinized swine fever virus as prepared by Lederle laboratories, the deaths from all causes were 0·88%.—J. T. DONE.

BETTS, A. O. (1952). **Respiratory diseases of pigs. V. Some clinical and epidemiological aspects of virus pneumonia of pigs.**—*Vet. Rec.* **64,** 283-288. [Author's summary slightly modified.] **439**

The term "Virus Pneumonia of Pigs" (V.P.P.) is suggested for the disease which was described by Gulrajani and Beveridge [*V.B.* **22,** 2499] and called by them provisionally "infectious pneumonia of pigs".

About 50% of bacon pigs have lesions of pneumonia at slaughter. The percentage affected has increased considerably since the end of the war. Twenty-two herds, selected at random, were examined and 16 were found to be affected with the disease.

The causal virus is a large one and persists for a long time in pneumonic lesions. It can cause pneumonia by itself, but most field cases are associated with secondary bacterial infection, *Pasteurella* being the most commonly found.

In the field the disease occasionally takes an acute form but usually is chronic. The most prominent symptom is a cough; the growth rate of affected pigs is often retarded and sometimes these pigs later develop acute pneumonia associated with secondary bacteria.

The lesions are usually confined to the anterio-inferior portions of the lungs; are generally plum-coloured and are clearly demarcated from the normal lung tissue.

CLARA, I. (1950). L'applicazione in Italia dei metodi vaccinali specifici contro il cimurro del cane—virus cimurroide di Green e sierovaccinazione. **[Use of Green's distemper vaccine in Italy.]**—*Atti Soc. ital. Sci. vet.* **4,** 289-292. [French and German summaries.] **440**

Green's vaccine has been used on about 2,000 dogs in Italy. Severe reactions with fatal outcome were observed in highly bred subjects; the interfering action of Green's virus yielded no appreciable therapeutic success in animals already infected.—I. MARTINI.

COHRS, P. (1952). Die ansteckende Leberentzündung des Hundes (Hepatitis contagiosa canis). **[Canine virus hepatitis in Germany.]** —*Dtsch. tierärztl. Wschr.* **59,** 114-120. **441**

C. states that this is the first published report on the occurrence of canine virus hepatitis in Germany. From 1938–51 it was diagnosed in 64 out of a total of 3,008 P.M. examinations of dogs. Clinically its course is very acute; often dogs collapse suddenly without previous illness; where there are preliminary symptoms, they are not characteristic. The main changes found P.M. are in the liver which is swollen, bright red, speckled and covered with a network of fibrin. Nuclear inclusion bodies confirm the diagnosis; they are seen mainly in the liver cells, but also in the spleen and in the endothelial cells of the vessels of the brain and of the glomeruli of the kidney.

—A. MAYR-HARTING.

KAWECKI, Z. (1951). Badania nad etiologią występującego w Polsce, epizootycznego zapalenia mózgu lisów srebrzystych. **[Encephalitis in silver foxes in Poland.]**—*Med. weteryn.* **7,** 733-734. [English and Russian summaries.] **442**

A pantropic virus is responsible for outbreaks of epizootic encephalitis in silver foxes in Poland.

Hygiene and diet play an important part in the control of the disease.

The virus can be cultivated on chick embryos and its virulence can be preserved for six months in 50% glycerol.—J. R. MITCHELL.

DIVO, A. (1950). La enfermedad de Newcastle (*Neumoencefalitis aviaria*) en Venezuela. **[Newcastle disease (avian pneumoencephalitis) in Venezuela.]**—*Bol. Inst. Invest. Vet., Caracas.* **3,** 547-575. [Abst. from English summary.] **443**

A detailed description of an extensive outbreak in Venezuela, with photographs of affected birds and a description of serological methods whereby the identity of the disease was established.—J. EDWARDS.

BANG, F. B. & FOARD, M. A. (1952). **The effect of Newcastle disease virus on chicken red blood cells. I. The variation in agglutination patterns with different strains of virus.** —*Amer. J. Hyg.* **55,** 363-372. [Abst. from authors' summary.] **444**

BANG, F. B. & LIBERT, R. (1952). **The effect of Newcastle disease virus on chicken red blood cells. II. A study of the adsorption, sensitization and elution processes.**—*Ibid.* 373-385. [Abst. from authors' summary.] **445**

I. Newcastle disease virus produces a transient pattern formation with chicken red blood cells. This is due to a change in the surface of

the red blood cell, apparently wrought by very few virus particles per red blood cell. It may be produced by all three of the strains of virus tested (virulent strain CG179, a virulent B strain and the low virulence Hitchner or Blacksburg strain used for vaccination of chicks). However, in some cases the amount of inhibitor in the allantoic fluid from infected eggs is so great that agglutination is observed only with washed virus. With the mild Blacksburg "vaccine" strain, agglutination is so transient that tests must be read within 30–40 min. after they have been set up and may be completely negative at 60 min. Agglutination by this strain is inhibited by a temperature of 4°C.

II. Adsorption of the virus of Newcastle disease on red blood cells can be determined only when a favourable ratio of virus particles to red blood cells has been attained. When this ratio is optimum, well over 90% of the haemagglutinating activity may be adsorbed on chicken red blood cells. The maximum number of particles so adsorbed is calculated as about 15 to 50 virus particles per red blood cell, an estimate confirmed by electron microscopy of the adsorption of virus on the ghosts of haemolyzed red blood cells. The number of particles per red blood cell is much greater in preparations of red blood cells on which periodate-treated virus is adsorbed.

"Sensitization," or alteration of red blood cells so that they may be agglutinated by certain sera and cell products, is produced by the same small number of particles per red blood cell as is agglutination. This reaction occurs with the strains tested over a wide range of temperatures and does not depend upon persistence of virus on the red blood cell. It is not prevented by periodate treatment of the virus.

Elution of Newcastle disease virus from red blood cells occurs at temperatures from 4°C. to 37°C., but is much more rapid at 37°C. Measurement of the haemagglutinating activity of the virus after elution shows that most of the virus has come off the red blood cells. Elution is inhibited by weak solutions of periodate. The calcium ion has no demonstrable effect.

Dixit, S. G. (1950). **Some observations on the reaction of vaccinations with chick embryo vaccine against Ranikhet (or Newcastle disease).** — *Indian J. vet. Sci.* **20**, 277-279. 446

Listlessness, reduction in egg yield and lameness in a few cases were the main post-vaccination reactions. In certain cases there was resuscitation of fowl pox, coccidiosis and spirochaetosis.—D. R. Uppal.

Mandel, A. & Jordan, W. S., Jr. (1952). **Ornithosis (psittacosis) in chickens and poultry workers.**—*Amer. J. Hyg.* **55**, 230-238. 447

The authors described a case of atypical pneumonia possibly psittacosis in a poultry worker. The patient's serum had a high antibody content against the psittacosis-lymphogranuloma group of viruses. Such antibodies were also present in the sera of other poultry workers and in fowls slaughtered in poultry stores. The authors discussed the possible significance of these findings.—D. Luke.

Schulz-Ehlbeck, H. W. (1952). Experimentelle Untersuchungen über das Verhalten von murinem Poliomyelitisvirus in Zecken (Ornithodorus moubata). [**Behaviour of the murine poliomyelitis virus in** *Ornithodoros moubata*.]—*Z. Tropenmed. u. Parasit.* **3**, 472-474. [Abst. from English abst.] 448

The author infected *O. moubata* by allowing them to feed on mice infected with murine poliomyelitis virus, strain Columbia SK. Retransfer of virus to fresh mice by injection of ground tick material was possible only up to 21 days after the ticks had been so fed, the virus losing titre progressively during this period. It could not be transmitted to healthy mice by allowing ticks so infected to feed on them. Eggs and coxal glands of infected ticks proved free from virus. The author suggested that the virus, unable to pass the intestinal wall, does not multiply in ticks and undergoes destruction or inactivation when the ingested blood is digested.

Pollard, M. (1951). **The inactivation of poliomyelitis virus by freeze-drying.**—*Texas Rep. Biol. Med.* **9**, 749-754. [Abst. in *Bull. Hyg., Lond.* **27**, 615. (1952), copied *verbatim.*] 449

Poliomyelitis virus is relatively stable, resisting glycerol and ether, and maintaining infectivity in faeces and sewage. It is surprising therefore that the virus is destroyed when preparations are freeze-dried. The author has studied the effect of freeze-drying on pools of nerve tissue infected with the Lansing and Brunhilde types of poliomyelitis viruses, rabies, and St. Louis encephalitis. When poliomyelitis virus was freeze-dried infectivity was reduced by 100– to 1,000–fold. This loss of activity could not be prevented by the addition of serum, glucose, skim milk, or other usually protective substances. Poliomyelitis virus treated by this process also lost antigenicity as judged by the inoculation of monkeys.

Kaplan, A. S. & Melnick, J. L. (1952.) **Effect of milk and cream on the thermal inactivation**

of human poliomyelitis virus.—*Amer. J. publ. Hlth.* **42**, 525-534. **450**

Human and murine strains of poliomyelitis virus suspended in milk, cream, or ice cream, were inactivated only at pasteurization temperatures. When suspended in water, they were inactivated at lower temperatures.

—A. Ackroyd.

Montemagno, F. (1952). La aureomicino-collirio-terapia nella rickettsiosi congiuntivale dei ruminanti. [**Aureomycin in the topical treatment of rickettsial conjunctivitis in ruminants.**]—*Profilassi.* **25**, 15-19. [English, French and German summaries. Abst. from English summary.] **451**

M. used aureomycin to treat cows affected with conjunctivitis due to rickettsia. Good results were obtained in both mild and severe cases.—A. H. Linton.

Stoenner, H. G. (1951). **Experimental Q fever in cattle—epizoötiologic aspects.**—*J. Amer. vet. med. Ass.* **118**, 170-174. **452**

Previous publications are reviewed. Between one and five animals were used in each experiment.

Intramammary injection of the organism caused persistent shedding of rickettsia in the milk and antibodies appeared in the serum. Infection did not follow the dipping of the teats in infective milk.

Yolk-sac cultures were shown to be infectious by intradermal injection and by inhalation but not by instillation into the conjunctival sac.—Ian Davidson.

Badiali, L. (1952). Infezione sperimentale da C. burnetii nei bovini. [**Experimental infection in cattle with** *Rickettsia burneti.*]—*Zooprofilassi.* **7**, 155-167. [English, French and Spanish summaries.] **453**

A repetition of experiments performed by others, and with similar results [see *V.B.* **19**, 1268]. In this case the intramammary infection of two cows was attempted.—Roy Mack.

Winn, J. F. & Elson, B. E. (1952). **Effects of feeding colostrum containing** *Coxiella burnetii* **antibodies to newborn calves of two categories.**—*Amer. J. trop. Med. Hyg.* **1**, 821-825. [Abst. from authors' summary.] **454**

Colostrum containing complement-fixing antibodies against *Rickettsia burneti* was fed to new-born calves in two categories: (a) calves, which had not been suckled, from serologically-positive dams, and (b) calves, which had not been suckled, from serologically-negative dams.

The latter group did not develop specific antibodies over a period of one month following birth, whereas the former group did develop specific antibodies during this period.

The authors discussed the possible source of such specific antibodies.

Babudieri, B. & Ravaioli, L. (1952). Infezione sperimentale della pecora con Coxiella burneti. [**Experimental infection of sheep with** *Rickettsia burneti.*]—*Zooprofilassi.* **7**, 1-21. [English and Spanish summaries.] **455**

In three sheep experimentally infected by the subcutaneous and intratracheal routes the only symptom was a rise in body temperature (up to 41°-41·8°C.). Rickettsia could be isolated from the blood, milk and urine, but only for a brief period after infection. The complement-fixation test was positive on the seventh day.—I. Martini.

Monaci, V. & Scaglione, C. (1952). Sulla frequenza di anticorpi contro la R. burneti in persone addette alla concia delle pelli. [**Q fever antibodies in tannery employees.**]—*Boll. Ist. sieroter., Milano.* **31**, 287-290. [Abst. from English summary.] **456**

Complement-fixation tests on the sera of 482 persons employed in eight tanneries in Lombardy gave positive reactions to *R. burneti* antigen in 38 cases (7·8%).

Lennette, E. H., Clark, W. H., Jensen, F. W. & Toomb, C. J. (1952). **Q fever studies. XV. Development and persistence in man of complement-fixing and agglutinating antibodies to** *Coxiella burneti.*—*J. Immunol.* **68**, 591-598. **457**

Serial blood samples from 102 individuals having Q fever were examined by the complement-fixation test, and from 85 of these by the agglutination test. The diagnostic values of the two tests were compared.

Antibodies were detected up to 28 months after the onset of illness.—Ian Davidson.

Weyer, F. (1952). Versuche zur künstlichen Infektion der Schweinelaus Haematopinus suis L. mit Rickettsia prowazeki und R. quintana. [**Attempts to infect** *Haematopinus suis* **with** *Rickettsia prowazeki* **and** *R. quintana.*]—*Schweiz. Z. allg. Path.* **15**, 203-216. [English and French summaries. English summary modified.] **458**

H. suis were infected rectally with *R. prowazeki.* The invasion of the mid-gut cells is essentially similar to that seen in the infection of human body lice. Death of *H. suis* occurs

at a time when relatively few gut cells are invaded by rickettsia; this is possibly due in part to detrimental effect of the rickettsia on the symbionts.

The intracoelomic inoculation of *Haematopinus* with *R. prowazeki* was followed by a profuse multiplication as is the case in *Pediculus*.

Attempts at infecting *H. suis* with *R. quintana* both by rectal and by intracoelomic inoculation failed; *R. quintana* thus has a much narrower host specificity than *R. prowazeki* or *R. mooseri*, not only towards mammals but also towards blood sucking lice.

WISSEMAN, C. L., JR., HAHN, F. E., JACKSON, E. B., BOZEMAN, F. M. & SMADEL, J. E. (1952). **Metabolic studies of rickettsiae. II. Studies on the pathway of glutamate oxidation by purified suspensions of *Rickettsia mooseri*.**—*J. Immunol.* **68**, 251-264. **459**

The authors presented evidence to show that glutamate is oxidized *via* the dicarboxylic acid portion of the Krebs cycle.

R. mooseri was found to oxidize these acids and some were shown to occur during oxidation of glutamate. Attempts to demonstrate enzymes were inconclusive.—IAN DAVIDSON.

See also absts. **355** (isolation of *Salmonella* from dogs with distemper); **540** (report, U.S.A.).

IMMUNITY

ADLER, F. L. (1952). **Bactericidal action mediated by antibodies specific for heterologous antigens adsorbed to bacterial cells.**—*Proc. Soc. exp. Biol., N.Y.* **79**, 590-593. [Author's conclusion copied *verbatim*.] **460**

The bactericidal activity of complement is mediated by the reaction between antibody and antigens located at the surface of bacterial cells. These surface antigens need not be constituents of the cell but may be substances which have been artificially adsorbed to its surface.

MALKIEL, S. & HARGIS, B. J. (1952). **The effect of ACTH and cortisone on the quantitative precipitin reaction.**—*J. Immunol.* **69**, 217-221. [Authors' summary slightly modified.] **461**

Rabbits were treated with A.C.T.H. and cortisone given in physiologically significant doses prior to and during the period of immunization with bovine serum albumin. The behaviour of the reaction between the antigen and the antibodies thus engendered as studied by the quantitative precipitin technique was not inconsistent with that from control animals. A.C.T.H. caused a marked diminution of the antibody titre and cortisone an almost complete suppression.

ROSENFIELD, R. E. & VOGEL, P. (1951). **The identification of hemagglutinins with red cells altered with trypsin.**—*Trans. N.Y. Acad. Sci.* Ser. II. **13**, 213-220. **462**

A standard stable solution of trypsin was prepared for the optimal treatment of haemagglutinogens under study.—JOHN SEAMER.

KNIGHT, C. A. (1952). **The agglutination of chicken erythrocytes with special reference to avian histone.**—*Arch. ges. Virusforsch.* **4**, 649-658. [In English.] **463**

As a part of research work into the nature of the chemical basis for the haemagglutinating capacity of influenza viruses, K. examined certain non-viral agglutinating substances, and in particular histone preparations from fowl erythrocytes. The results obtained suggested that a lipoid is involved in the agglutination phenomenon although no fatty substance tested showed major clumping ability. Histone preparations had by far the highest agglutinating capacity of any of the non-viral substances tested.—D. LUKE.

SAINT-MARTIN, A. (1952). Prophylaxie et traitement de l'ictère du muleton. [**Prevention and treatment of haemolytic disease of mule foals.**]—*Rev. Méd. vét.* **103**, 263-268. **464**

The author described the result of three years' work on haemolytic disease of mule foals. Maternal colostrum is examined by the Wiener-Race technique and the mule foal is not allowed to suck until results are known. Treatment is varied according to the titre found and consists in the regulation of suckling periods. Where titre is highest, suckling is prevented until a blood transfusion has been given. Treatment of established cases by blood transfusion gave 58% recoveries.—G. V. LAUGIER.

BRION, A. (1950). Sur la disparition des anticorps anti-mulet dans le colostrum de la jument mulassière tachée de jaunisse, après le part. [**The titre of anti-mule antibodies in the colostrum of the mare.**]—*C. R. Soc. Biol. Paris.* **144**, 1376-1378. **465**

The development of jaundice in new-born foals of iso-immunized mares may be prevented by withholding the dam's milk from the foal and milking the mare for 36 hours after parturition, when it is known that the colostrum is rich in anti-mule antibodies which may bring about haemolysis of the foals' blood.

B. produced haemolytic jaundice artificially in a new-born mule after immunizing the mare by injections of donkey's blood. In this case also it was apparent that within 36 hours of birth the level of antibodies in the blood and colostrum had fallen to a harmless level.

—W. S. MARSHALL.

ZELIGMAN, I. (1952). **Allergic contact dermatitis due to pork corticotropin.**—*J. Amer. med. Ass.* **149.** 263-264. **466**

Z. reported a case of contact dermatitis due to pig corticotropin in a nurse who developed allergic symptoms after handling the drug. Patch tests to pig corticotropin were positive, to cattle corticotropin negative.—W. R. BETT.

See also absts. **322** (*Str. pneumoniae* antiserum for calves); **328** (anthrax vaccine); **338** (tuberculin and circulating antibody production in infected g. pigs); **339** (TB. immunization experiments); **344-345** (swine erysipelas); **348-350** (fowl cholera); **351** (immunological constituents of *S. abortus-equi*); **352** (antigenic relationship between *Salmonella* and *Escherichia*); **358** (antigenic analysis of *S. pullorum* strains); **361** and **364** (brucellosis); **370** (spirochaetosis of fowls); **373** (leptospirosis in dogs); **375** (leptospiral complement-fixing antigens); **401** (*Trichomonas* haemagglutination); **413-416** (F. & M. disease); **419-422** (rabies); **433** (equine infectious anaemia); **435** (rinderpest); **436-438** (swine fever); **440** (distemper); **444-446** (Newcastle disease); **456-457** (Q fever).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

WASSERBURGER, H.-J. (1952). Schweinläusebekämpfung durch perorale HCC-Verabreichung. **[Orally administered benzene hexachloride against lice in swine.]**—*Mh. VetMed.* **7,** 255-258. **467**

The preparation used contained 10% γ-isomer. Dosage was 30 mg. per kg. body weight, mixed with the food. This proved remarkably effective and safe.—ROY MACK.

SPENCE, T. (1952). La lutte contre l'hypoderme en Grande-Bretagne. **[Control of warble flies in Great Britain.]**—*Bull. Off. int. Epiz.* **38,** May. pp. 646-657. [Author's English summary copied *verbatim.*] **468**

In Great Britain a statutory Order compels the treatment of all infested cattle with a derris suspension applied to the larvae in the open ulcers. This treatment is supposed to be performed by the farmers, but is commonly evaded and is difficult to enforce, so that there is little progress towards eradication.

The Ministry of Agriculture has attempted to aid the campaign with a propaganda drive by means of exhibits, lectures, posters and film strips.

A partial survey has shown some geographical limitations to the areas of distribution of the two species in Britain and has confirmed the earlier seasonal occurrence of *H. lineatum.*

D.D.T. and B.H.C. have been demonstrated to be ineffective. A small field trial has shown that phenothiazine given by mouth to the host is not lethal to the warbles.

Biological studies, directed towards producing larvae for systemic insecticidal work, has produced successful rearing methods, but has failed to induce the flies to lay fertile eggs.

ROMBOLI, B. (1950). L'ipodermosi della capra. **[*Hypoderma* infestation in goats.]**—*Atti Soc. ital. Sci. vet.* **4,** 235-241. [English and French summaries.] **469**

A general discussion on the occurrence of *Hypoderma* larvae in goats in Sicily. R. gave insufficient detail of the characters of the larvae he found for their identification. He suggested that the larvae found were distinct from *H. bovis.*—R. G. MARES.

POTTS, W. H. & JACKSON, C. H. N. (1952). **The Shinyanga game destruction experiment.**—*Bull. ent. Res.* **43,** 365-374. [Abst. from authors' summary.] **470**

Game animals were shot in an isolated area of some 600 sq. miles over a period of about five years. The density of animals was originally about 10 to the sq. mile. This is very low compared with densities recorded from national parks, and examination of the evidence available shows that the Tanganyikan bushland is understocked with game. As the result of the shooting, *Glossina morsitans* and *G. swynnertoni* were exterminated, and *G. pallidipes* was either exterminated or very greatly reduced. Experimental cattle then remained healthy in the area for 11 months, after which they were removed.

This result was achieved in spite of considerable invasion of the area by cattle, particularly intense at a late period when such an alternative source of food might have been expected to be particularly valuable to the tsetse. The fat, residual dry weight and size of the flies decreased, but there was no apparent effect on mean age or the proportion of females in the catches, nor apparently did the flies turn to avian blood.

The cost was £50 per sq. mile; but this figure would be very much greater in normal practice, with areas not isolated from the rest of the fly belt. Game destruction is not recommended except in isolated areas of manageable size; discriminative clearing of the habitats, even at initially greater cost, is preferable as offering a more lasting solution.

STERNBURG, J. & KEARNS, C. W. (1950). **Degradation of DDT by resistant and susceptible strains of house flies.**—*Ann. ent. Soc. Amer.* **43**, 444-458. 471

It has been earlier reported that D.D.T.-resistant house-flies were able to convert D.D.T. [2,2-bis(*p*-chlorophenyl)-1,1,1-trichloroethane] to a non-toxic substance, D.D.E. [1,1-dichloro-2,2-bis(*p*-chlorophenyl)ethylene]. The authors have found that both the larvae and adults of resistant house-flies were able to convert D.D.T. to D.D.E., both in the cuticle hypodermis and in the midgut, and that this property was maintained by these tissues in *in vitro* studies.

In the adults of susceptible house-flies a small amount of conversion of D.D.T. to D.D.E. occurred in the midgut only while there was always a loss of D.D.T. from the tissues of susceptible strains which suggested that a substance was being formed which could not be detected by the Schecter test. The authors were unable to confirm that there was extensive absorption and transport of D.D.T. in house-fly tissues or that there was further degradation of D.D.E.—M. J. LETHBRIDGE.

See also absts. **428** (arthropod-borne encephalitis in Australia); **448** (behaviour of murine poliomyelitis virus in *O. moubata*); **458** (attempts to infect *H. suis* with *R. prowazeki* and *R. quintana*).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

I. LIENERT, E. & MATHOIS, H. (1952). Prüfung weiterer, mit Galle ausscheidbarer Arzneimittel auf Leberegelwirksamkeit. **[Testing against liver fluke of anthelmintics which can be excreted in the bile.]**—*Wien. tierärztl. Mschr.* **39**, 344-352. [English, French and Italian summaries.] 472

II. LIENERT, E. & MATHOIS, H. (1952). Untersuchungen zur Ermittlung noch stärker leberegelwirksamer Substanzen. **[Substances effective against *Fasciola hepatica*.]**—*Ibid.* 410-416. [English, French and Italian summaries]. 473

I. Twenty-two drugs, excreted *via* the bile, were tested for efficacy against *Fasciola hepatica* by the use of a kymograph. The most efficient and least toxic were quinosol (the potassium salt of oxy-quinoline-sulphonic acid), sodium iodide, sulphamethazine and Congo red.

II. Of 27 further drugs tested, mercurochrome, phenylmercuriacetate and ascorbic acid were very effective, but the authors had not yet studied their toxicity or route of elimination.
—M. L. CLARKE.

SINHA, B. B. (1950). **Life-history of *Cotylophoron cotylophorum*, a trematode parasite from the rumen of cattle, goat and sheep.**—*Indian J. vet. Sci.* **20**, 1-11. 474

The miracidia of *C. cotylophorum* develop in 7–9 days in summer and in 15–16 days in winter in India. Sporocysts and rediae develop in 2 and 10 days respectively. Cercariae are shed in 30 days. The snail, *Indoplanorbis exustus* is the intermediate host.
—G. L. SHARMA.

MCINTOSH, A. (1951). **The generic and trivial names of the species of nematodes parasitic in the large intestine of equines, commonly known from 1831 to 1900 as *Strongylus tetracanthus* Mehlis, 1831.**— *Proc. helminth. Soc., Wash.* **18**, 29-35. 475

The author gave the history of the nomenclature of the small strongyles of the horse, placing them in seven genera (*Cyathostomum, Cylicocercus, Cylicocyclus, Cylicodontophorus, Cylicostephanus, Cylicotetrapedon* and *Cylicobrachytus*). He gave a list of species.
—JAS. G. O'SULLIVAN.

BEHRENS, H. (1951). Die Behandlung des Lungenwurmbefalles der Schafe mit Merckojod. **[Treatment of lungworm infestation in sheep.]**—*Tierärztl. Umsch.* **6**, 394-397. 476

An account of the treatment of sheep with a proprietary preparation of colloidal iodine given intratracheally, it is stated with good results.—M. L. CLARKE.

MARTIN, H. M. (1952). **Anthelmintic studies with 6-tertiary-butyl-m-cresol in dogs.**—*Proc. Helm. Soc. Wash.* **19**, 81-85. 477

97·3% of ascarids harboured by dogs were expelled with the above compound. Doses of 0·05—0·3% per lb. body weight were effective.
—BERYL A. KAY.

BEAUTYMAN, W. & WOOLF, A. L. (1951). **An ascaris larva in the brain in association with acute anterior poliomyelitis.**—*J. Path. Bact.* **63**, 635-647. [Authors' summary slightly modified.] 478

An encapsulated ascarid larva was found in the thalamus of a child who died with clinical and morbid anatomical evidence of poliomyelitis. There was histological evidence of migration of larvae through the cerebral vessels.

The poliomyelitis principally affected the cervical segments of the spinal cord and the nuclei of the brain stem.

The authors discussed the manifestations of larval migration of ascaris through the brains of animals, the possible relationship between the larval migration and the development of poliomyelitis and the cause of neurological symptoms in ascariasis. They gave 14 photomicrographs.

INNES, J. R. M. & SHOHO, C. (1952). **Nematodes, nervous disease, and neurotropic virus infection. Observations in animal pathology of probable significance in medical neurology.**—*Brit. med. J.* Aug. 16th, 366-368. 479

The authors commented on the nervous syndrome caused by *Setaria* larvae in the central nervous system and on the case described by BEAUTYMAN & WOOLF [see preceding abst.] in which an ascaris larva was found in the brain of a child affected with acute poliomyelitis of the brain stem. They discussed the problems of clinically inapparent helminth infestation of the central nervous system, of nematode infestation facilitating, or co-existing with, virus infection and of the migratory paths of helminths to the C.N.S., and suggested that a watch should be kept in human beings for conditions analogous to the disease they have described in animals.
—E. COTCHIN.

LYND, F. T. & SHORT, G. E. (1952). **Microfilaria in brain tissue of a skunk.**—*J. Amer. vet. med. Ass.* **120,** 297. 480

The authors recorded the presence of microfilariae in the brain of a skunk, suspected to have rabies. They believed this to be the first recorded finding of microfilariae in the brain of that species. Parasites were numerous in smears made from various areas. No specific identification was made.—M. L. CLARKE.

PAPADANIEL, S. K. (1951). **[Conjunctivitis in a horse characterized by microfilariae.]**—*Delt Hellen. kten. Hetair.* **2,** 99-103. [French summary.] 481

P. described conjunctivitis in both eyes of a horse also affected with microfilarial dermatitis. Microfilariae were present in material obtained from the conjunctiva. Neosalvarsan, tartar emetic, and trypanblue injected intravenously were all ineffective.—J. M. TAIT.

MOIGNOUX, J. B. (1952). Sur l'identité des deux espèces d'*Onchocerca*: *O. reticulata* Dies- 1841 et *O. cervicalis* Railliet et Henry- 1910. Étude biologique comparative. **[Identity of *Onchocerca reticulata* and *O. cervicalis*.]**—*C.R. Soc. Biol., Paris.* **146,** 573-575. 482

The two species are differentiated mainly on host relationship. M. showed that the corresponding larvae are identical and have the same insect vector and he concluded that the two species are identical.—JAS. G. O'SULLIVAN.

OTTO, G. F. (1952). **The treatment of canine filariasis.**—*Auburn Vet.* **8,** 69-75. 483

Arsenamide (caparsolate sodium) in doses of 1 ml. per lb. body weight will kill adult *Dirofilaria immitis* and after completion of the arsenamide therapy, fuadin will clear the blood of microfilariae.—JAS. G. O'SULLIVAN.

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

WEISBERGER, A. S., HEINLE, R. W. & LEVINE, B. (1952). **The effect of *l*-cysteine on nitrogen mustard therapy.**—*Amer. J. med. Sci.* **224,** 201-211. 484

In rabbits the administration of *l*-cysteine before the injection of nitrogen mustard strikingly diminishes the severe leucopenia which is regularly induced by nitrogen mustard. In the human subject the protective effect is not so great or so consistent. Its mechanism is not known.—W. R. BETT.

HILARIDES, P. J. (1951). Adeno-carcinomen bij een ingevoerd paard. **[Adenocarcinoma in a horse.]**—*Tijdschr. Diergeneesk.* **76,** 453-454. 485

An account of adenocarcinoma of the kidney in an adult horse. The tumour weighed 43·5 kg. and metastases were present in the renal lymph nodes, liver, peritoneum, pleura and omentum.—C. A. VAN DORSSEN.

BLOOM, F. (1952). **Effect of cortisone on mast cell tumors (mastocytoma) of the dog.**—*Proc. Soc. exp. Biol., N.Y.* **79,** 651-654. [Author's summary copied *verbatim*.] 486

The effect of cortisone was studied in a dog with malignant multiple mast cell tumors (mastocytoma). A total of 900 mg was given intramuscularly at the rate of 100 mg daily. The tumors rapidly regressed in size so that by the 9th day of treatment they had completely disappeared macroscopically. Microscopically the neoplastic mast cells showed cytoplasmic vacuolization, conglomeration and altered staining reaction of the metachromatic basophilic gran-

ules, disappearance of many fine granules, fraying and disruption of the cellular membrane, granule scattering, and, finally, cellular destruction and disappearance. The encouraging results obtained in the treated animal warrant further investigation of cortisone in the treatment of dogs with malignant mast cell tumors.

MITROVIĆ, B. (1952). Jedan slučaj mielogene leukemije kod psa. [**Myelogenous leucaemia in a dog.**]—*Vet. Glasn.* **6**, 279-281. 487

A brief clinical note of myelogenous leucaemia in a dog. Brief details were given of the blood count and general syndrome.

—I. MARTINI.

CAMPBELL, J. G. (1952). **The occurrence of blood filaments of "pseudo-spirochaetes" in certain neoplastic conditions.**—*Brit. vet. J.* **108**, 191-194. 488

An illustrated account of certain filamentous objects, demonstrable by dark-ground or phase-contrast microscopy, or by Giemsa stain, in fresh blood from chickens infected with erythroleucaemia, and in sterile normal avian blood kept at room temperature for 12 hours or more in sealed slides. Typically, but not always, they appeared as tenuous filaments, from 3–30μ long, which were usually attached to the pole of an erythrocyte, or appeared to arise from the region of the nucleus, which might appear to be degenerating. Reference was made to previous records of these "pseudo-spirochaetes" in mammalian blood.

—E. COTCHIN.

NUTRITIONAL AND METABOLIC DISORDERS

MCCLYMONT, G. L. (1952). **Specific dynamic action of acetic acid and heat increment of feeding in ruminants.**—*Aust. J. sci. Res.* Ser. B. **5**, 374-383. [Author's summary modified.] 489

The author drew attention to the lack of adequate explanation of the high specific dynamic action of acetic acid and the high heat increment of feeding in ruminants. He presented no new experimental data but reviewed recent literature on the metabolism of acetic acid in ruminants and non-ruminants and advanced a theory that the high specific dynamic action of acetic acid is related to the following facts: it is non-glyconeogenic; it is not utilized in protein synthesis; it is oxidized by most, if not all tissues; and it is utilized significantly for lipogenesis by only a few tissues, excluding in particular muscle and kidney. Furthermore, the metabolism of the acid appears to be relatively "uncontrolled", the uptake by tissues being directly dependent on the arterial level and unaffected by insulin, at least in ruminants, in contrast to glucose. Finally, there is very little storage of absorbed acetic acid in the body fluids. Consequently, it is metabolized almost as fast as it is absorbed: in some tissues, notably intestinal wall, liver, and adipose tissue and lung, it is partitioned between oxidation and lipogenesis; in others, particularly muscle and kidney, it is of necessity largely utilized oxidatively. The high specific dynamic action of acetic acid indicates that the net partition is in favour of oxidation.

The high heat increment of feeding in ruminants is considered to be due to the quantitative importance of acetic acid and butyric acid, which also has a high specific dynamic action, as products of ruminal digestion, and of acetic acid and β-hydroxybutyric acid, derived from acetic and butyric acids, as peripheral metabolites.

JARRETT, I. G., POTTER, B. J. & FILSELL, O. H. (1952). **Lower fatty acids in the intermediary metabolism of sheep.**—*Aust. J. exp. Biol. med. Sci.* **30**, 197-206. [Authors' summary copied *verbatim.*] 490

The concentrations of volatile acids, sugar, ketone bodies, lactic and pyruvic acids in the systemic blood were determined at intervals following the intravenous injection of acetic or propionic acids, or an equimolar mixture of the two. Butyric acid was also administered under similar conditions.

The tolerance curves for the volatile acids indicated that propionate was removed more rapidly than acetate or butyrate from the blood stream. Acetate alone caused no significant rise in the concentration in the systemic blood of sugar, lactic acid and pyruvic acid. Propionate, however, did produce a marked increase in the blood levels of these glucogenic substances.

Both acetate and butyrate when given alone were markedly ketogenic whereas propionate caused a slight reduction in circulating ketone bodies. The presence of propionate in a mixture of acetate and propionate prevented the rise that normally would have followed acetate alone.

SIJPESTEIJN, A. K. & ELSDEN, S. R. (1952). **The metabolism of succinic acid in the rumen of**

the sheep.—*Biochem. J.* **52,** 41-45. [Authors' summary copied *verbatim.*] 491

The concentration of succinate in the rumen of sheep is low and there is only a slight increase after feeding. Added succinate is rapidly removed from the rumen and at the same time there is an increase in the concentration of propionate but not of any other volatile fatty acid. Washed suspensions of rumen bacteria convert succinate quantitatively to propionate and carbon dioxide. Washed suspensions of rumen bacteria ferment glucose and cellobiose rapidly with the production of about 1 equivalent of acid per hexose unit. In addition some free carbon dioxide is produced.

WASSERMAN, R. H., DUNCAN, C. W., CHURCHILL, E. S. & HUFFMAN, C. F. (1952). **The effect of antibiotics on *in vitro* cellulose digestion by rumen microorganisms.**—*J. Dairy Sci.* **35,** 571-580. [Authors' summary slightly modified.] 492

The authors studied the effect of penicillin, streptomycin, neomycin and chloromycetin on *in vitro* cellulose digestion. Periodic antibiotic assays showed that the concentration of streptomycin increased above the initial level during the first eight hours and persisted at a high level throughout the 24-hour period. Approximately 40% of the neomycin disappeared within 45 min. and then the rate of disappearance was slow for the rest of the period. The concentration of penicillin dropped to less than 25% of the original value within 45 min. and then persisted at a constant level for the rest of the period. The level of chloromycetin decreased rapidly and was not detectable after four hours.

In the concentrations used, penicillin stimulated the cellulolytic rumen micro-organisms at the lower concentrations, neomycin was stimulatory in all concentrations, streptomycin was slightly stimulatory in the lowest concentration and chloromycetin adversely affected the micro-organisms.

JARRETT, I. G. & POTTER, B. J. (1952). **Carbohydrate metabolism in the young lamb.**—*Aust. J. exp. Biol. med. Sci.* **30,** 207-212. [Authors' summary copied *verbatim.*] 493

Determinations made on the concentration of total reducing sugar and of fructose in the blood of the young lamb showed that at birth the blood contained about 110 mg. of total sugar /100 ml. of which 60 mg./100 ml. consisted of fructose.

After birth the fructose concentration fell rapidly and reached a level of 4–8 mg./100 ml. about five hours later.

When the lamb had sucked, a rise in glucose and a transient rise in pyruvic acid in the blood were observed. The level of glucose was maintained at 120 mg./100 ml. for two weeks and during the next eight weeks gradually fell to the adult level.

The duration of hyperglycaemia following the intravenous injection of glucose was much shorter in the young lamb than in the adult sheep.

The concentration of total volatile acids in the systemic blood of young lambs was of the same order as adult sheep, 2–15 ml. 0·01N volatile acid/100 ml.

PEARSON, P. B. (1952). **The use of radioisotopes in animal nutrition.**—*Proc. VIth int. Congr. anim. Husb., Copenhagen,* 1952. **2,** 145-149. [In English. French, German and Danish summaries. Abst. from author's summary.] 494

Radioactive carbon 14 is of major importance since it can be incorporated into practically all of the organic compounds occurring in the animal body as well as into feeding stuffs normally fed to livestock. Compounds containing carbon 14 can be synthesized in the laboratory, or they may be produced biologically by plants or animals. Radio-active sulphur 35 with a half-life of about 87 days is especially useful in studying the metabolism of cystine and methionine. For example, the sulphur of methionine has been shown to appear in cystine providing further evidence that the latter can be formed from methionine.

Radio-autography provides a method for determining the location of radio-active isotopes in tissues. This technique is being effectively used to study the formation and metabolism of bone using calcium 45 and phosphorus 32. Using this technique it is possible to study the effects of various nutritional factors, reproduction and lactation on the rates of deposition in or removal of calcium and phosphorus from the skeletal structures.

VAN WYK, H. P. D., VERBEEK, W. A. & OOSTHUIZEN, S. A. (1952). **Buckwheat in rations for growing pigs.**—*Fmg. in S. Afr.* **27,** 399-402. 495

The results of feeding experiments suggest that buckwheat (*Fagopyrum esculentum*) may be substituted for part of the maize meal in pig rations, but some of the pigs in the groups receiving 60 and 80% buckwheat developed photosensitivity.—D. LUKE.

KUMMEROW, F. A., PAN, H. P. & HICKMAN, H. (1952). **The effect of dietary fat on the repro-**

ductive performance and the mixed fatty acid composition of fat-deficient rats.—*J. Nutrit.* **46,** 489-498. 496

Deficiency of arachidonic acid was found in the total fat analysis of female rats kept on a fat-free diet and their new-born young, which died at birth. The authors reported the results of supplementing the maternal diet with 5% hydrogenated fat and 5% maize oil respectively.
—CHARLOTTE M. WOOD.

CUTHBERTSON, W. F. J. (1952). **The nutritional significance of the animal protein factor and antibiotics.**—*Brit. J. Nutr.* **6,** 330-334. 497

Food of animal origin improves growth of chicks on vegetable rations. Some antibiotics when given with vitamin B_{12} also improve growth and even to a greater extent than animal protein. It is probable that antibiotics exert their effect through their action on the gut flora and on infections that depress growth and by improving the utilization of certain vitamins.
—CHARLOTTE M. WOOD.

CUNNINGHAM, I. J. (1951). **Stock licks.**—*Proc. Ruakura Fmrs Conf. Wk.* pp. 1-8. Wellington, N.Z.: Dept. of Agric. 498

This paper was written to discourage the indiscriminate feeding of mineral licks. C. made it quite clear that, in cases where a certain mineral is lacking, there is justification for feeding the mineral itself or for applying it to the pasture. There is never a place for the use of mineral licks. There is never much point in supplementing poor quality diets with mixed minerals in an attempt to replace calories.
—G. B. S. HEATH.

NEWLANDER, J. A. & RIDDELL, W. H. (1952). **Do dairy cattle need mineral supplements?**—*Pamphl. Vt agric. Exp. Sta.* No. 25. pp. 3. [Authors' summary slightly modified.] 499

The results obtained from long-time mineral trials in Vermont indicate that average- to moderately high-producing cows fed liberal allowances of fair-quality roughage, even though it may contain little or no legumes, and a good grain mixture do not need added supplements of calcium and phosphorus. Salt is always necessary and occasionally the trace elements, cobalt and iodine. In the unusual cases or deficent areas, the animals should be allowed to have free access to the proper supplement.

O'MOORE, L. B. (1952). **Problems in animal health associated with mineral imbalance in grazing herbage.**—*Vet. Rec.* **64,** 475-480. 500

The author reviewed descriptions of the diseases, symptoms, results of blood and pasture studies and animal requirements for syndromes arising from mineral imbalance *viz.* aphosphorosis, copper deficiency, cobalt pine and selenium toxicity.—CHARLOTTE M. WOOD.

SUTHERLAND, D. N. (1952). **Copper deficiency in cattle in Queensland.**—*Aust. vet. J.* **28,** 204-208. 501

This paper presents the first recorded evidence of copper deficiency in several herds of cattle in coastal areas of Queensland. The disease is characterized by scouring, emaciation, weakness and in some cases fading of coat colour; blood and liver copper levels are low. Drenching with copper sulphate is followed by a marked improvement, a cessation of scouring and a restoration of normal blood-copper levels.
—R. L. REID.

HARVEY, J. M. (1952). **Copper deficiency in ruminants in Queensland.**—*Aust. vet. J.* **28,** 209-215. Discussion pp. 215-216. 502

Copper deficiency in ruminants in Queensland is associated with pasture copper levels of 2·5–5·0 p.p.m. H. gave a summary of affected areas and presented data on levels of copper and molybdenum in affected soils and pasture. Blood-copper levels range from 0·01–0·05 mg. per 100 ml. and liver copper levels vary mostly from 3–25 p.p.m. of dry matter. Preliminary observations on the effects of parenteral copper administration were recorded.—R. L. REID.

LOFGREEN, G. P., KLEIBER, M. & LUICK, J. R. (1952). **The metabolic fecal phosphorus excretion of the young calf.**—*J. Nutrit.* **47,** 571-581. [Authors' summary modified.] 503

The authors described a method for the estimation of the metabolic faecal phosphorus excretion of the young calf by feeding casein labelled with P^{32} in a liquid diet. Values obtained by this method on two calves were 4·3 and 4·2 mg. per kg. body weight, or 33·3 and 32·4 mg. per 100 g. of dry matter intake.

The true digestibility of the phosphorus of casein was found to be about 93%, and the amount truly digested by two calves was approximately five times the metabolic faecal phosphorus excretion.

Values for the metabolic faecal phosphorus excretion calculated from the specific activity of the casein and the plasma specific activity five hours prior to the sampling of the faeces were in good agreement with those obtained from the difference in the ratios of $P:P^{32}$ in faeces and casein.

I. FLETCHER, D. E. & RIGDON, R. H. (1949). **Neurologic manifestations associated with**

vitamin A deficiency in young ducks. A clinical and pathologic study.—*Arch. Neurol. Psychiat., Chicago.* **61,** 199-209. [Abst. from authors' summary.] **504**

II. RIGDON, R. H. (1952). **Pathologic lesions in the nervous system of the duck fed a ration deficient in vitamin A.**—*Arch. Path.* **53,** 239-249. [Author's summary modified.] **505**

I. Young Pekin ducks maintained for a period of 10–15 days on vitamin A-deficient rations developed muscular weakness, incoordination, ataxia and paralysis. The significant lesions in the central nervous system were buckling and twisting of the spinal cord, sliding of the gray and white columns over each other, haemorrhage and necrosis of the gray and white matter, degeneration of the fibre tracts and nerve cells and intramedullary formation of cartilage and bone. Although the main aetiological factor responsible for these lesions may be the disproportionate rate of growth between the neural tube and the vertebral column, it is suggested that there is also an alteration in the differential rates of growth of various regions of the spinal cord. It is believed that vitamin A deficiency may adversely affect these growth potentials.

II. The lesions occurring in young ducks fed a vitamin-A-deficient ration are found primarily in the nerve cells of the spinal cord and the spinal root ganglia. Few petechiae are present in the grey substance of the cord. The vertebral column was carefully examined to see whether the osseous tissue had compressed the cord. Such pressure was not demonstrated, nor were foci of cartilage and bone or large haemorrhages present in the central nervous system of these ducks; however, they were fed the same vitamin-A-deficient ration as was used previously by Fletcher & Rigdon [see I *supra*]. The explanation of this variation in the occurrence of lesions in ducks is not known.

HOWES, C. E. & HUTT, F. B. (1952). **Breed resistance to nutritional encephalomalacia in the fowl.**—*Poult. Sci.* **31,** 360-365. **506**

Groups of Rhode Island Red, White Leghorn and Barred Plymouth Rock male chickens were maintained on an encephalomalacia producing diet for 40 days after hatching. The Leghorns proved to be significantly more resistant than the heavy breeds.—D. LUKE.

SHARMA, G. L., JOHNSTON, R. L., LUECKE, R. W., HOEFER, J. A., GRAY, M. L. & THORP, F., JR. (1952). **A study of the pathology of the intestine and other organs of weanling pigs when fed a ration of natural feedstuffs low in pantothenic acid.**—*Amer. J. vet. Res.* **13,** 298-303. [Authors' summary slightly modified.] **507**

Eight Duroc-Jersey weanling pigs fed a ration of natural feedstuffs low in pantothenic acid showed a decrease in the rate of weight gained, inefficient utilization of feed consumed, and colitis accompanied by diarrhoea.

The large intestine first showed degenerative changes and a few ecchymotic haemorrhages and, in the latter stages, small superficial discrete ulcers. The columnar epithelium showed degenerative changes, and there was markd hyperaemia of the lamina propria. The cellular reaction was mainly lymphocytic. The crypts of Lieberkuhn showed cystic dilatations and hyperplasia of the lymph nodules. One of the pigs slaughtered on the 26th day showed fibroplastic proliferation in the lamina propria. Control pigs did not show the deficiency symptoms or lesions.

CARPENTER, K. J. (1952). **The significance of the vitamin B complex for meat production.** —*Proc. VIth int. Congr. anim. Husb., Copenhagen,* 1952. **2,** 68-79. [In English. French, German and Danish summaries. Author's summary slightly modified.] **508**

Deficiency conditions for eight B-vitamins can be produced with laboratory animals. All these vitamins are also essential components of the economic meat-producing animals, but this does not mean that special precautions have always to be taken for their provision in the rations being fed. Nor is there any evidence to prove that the feeding of abnormally high levels of these vitamins will produce any special increase in performance or resistance to disease.

Under normal conditions the ruminants, from weaning onwards, can be relied on to obtain an adequate supply of B-vitamins produced by the micro-organisms in their alimentary tract.

The non-ruminants, of which pigs and poultry are the most important meat producers, obtain only a proportion of their B-vitamin requirements from this source. The amounts obtained are thought to increase when a fermentable energy source (such as raw potato starch) escapes digestion in the small intestine and reaches the caecum where it can allow the multiplication of vitamin-synthesizing bacteria. The non-ruminants can also obtain vitamins from manure, soil and insects in addition to what they get from pasture and mixed rations.

Requirements are greatest in early life, and during reproduction—when grain rations have

been traditionally supplemented with animal protein concentrates such as milk and fish meal. If, because of scarcity, these animal products are replaced by vegetable protein concentrates, extra riboflavin, pantothenic acid and vitamin B_{12} may need to be added to the rations—either in concentrates such as grass meal and by-products of the fermentation industries, or as especially synthesized products. The need for these materials will be reduced if the available animal proteins are reserved for the types of rations in which they are of the greatest value.

HVIDSTEN, H. & BREIREM, K. (1952). **Norwegian investigations of vitamins B in the nutrition of domestic animals.**—*Proc. VIth int. Congr. anim. Husb., Copenhagen,* 1952. **2,** 101-112. [In English. French, German and Norwegian summaries. Abst. from authors' summary.] 509

Extensive investigations of the vitamin B contents of fish and fish products have been carried out in Norway. In recent years attention has been focused especially on the vitamin B content of fish solubles.

It has been proved that herrings and sprats (brisling) are poor in vitamin B and may contain a factor destructive to vitamin B_1. The feeding of these species of fish raw to fur animals has resulted in serious symptoms of vitamin B_1 deficiency.

Fish solubles are a good source of riboflavin, vitamin B_{12}, niacin, choline and pantothenic acid, but are comparatively poor in vitamin B_1, biotin and folic acid. In addition to vitamin B_{12} they probably contain other important factors of A.P.F. effect. The growth promoting influence of fish solubles on chickens was found to be mainly due to their riboflavin content. The effect was found to vary according to the raw material and the method of manufacture.

It has been shown that exclusive feeding of silver foxes on dried cod causes greying of the furs (achromotrichia) and severe development of dandruff (hyperkeratosis), the latter condition being due to a deficiency of linoleic and linolenic acids. Achromotrichia could not be prevented by supplements of pantothenic acid, but it did not occur when all the B vitamins were added.

KESLER, E. M. & KNODT, C. B. (1952). **Increase in B-vitamin concentrations in digestive tract contents of young dairy calves.**—*Proc. Soc. exp. Biol., N.Y.* **79,** 85-87. [Authors' summary copied *verbatim.*] 510

Concentrations of thiamine, riboflavin, niacin and pteroylglutamic acid were found to be higher in the contents of various regions of the digestive tract of young dairy calves than in the feed consumed. The regions studied were the rumen, abomasum, small intestine and large intestine. Concentrations did not change with increasing age of the calf from 8 to 32 days.

CAMPBELL, J. E. & PHILLIPS, P. H. (1952). **Reproduction studies with dogs. I. Effect of a corn-soybean meal-alfalfa diet.**—*J. Nutrit.* **47,** 621-629. [Abst. from authors' summary.] 511

A diet composed of ground yellow maize, soya bean oil meal, alfalfa meal, cottonseed oil, a mineral mixture, niacin and irradiated yeast was found to be adequate for the growth and maintenance of dogs. When it was supplemented with 20 or 60 μg. crystalline vitamin B_{12} per kg., 5% condensed fish solubles, or 10% fresh beef liver, it was adequate for reproduction and lactation in dogs.

The basal diet either alone or supplemented with 6% brewers' yeast or a vitamin B_{12} concentrate would not support bitches through a reproductive cycle. The authors discussed an apparent discrepancy between the results obtained with crystalline vitamin B_{12} and the crude concentrate used.

PANDA, S. N. (1952). **Milk fever in a buffalo.** —*Indian vet. J.* **28,** 378-379. 512

P. recorded the usual symptoms of milk fever in a five-year-old Murrah buffalo, 36 hours after its second calving. Intravenous injection of 300 ml. of 10% calcium gluconate solution followed, 24 hours later, by intravenous administration of 200 ml. of the solution coupled with intramuscular injection of 10 ml. of adrenalin cured the animal.—G. L. SHARMA.

WARD, G. M,. BLOSSER, T. H. & ADAMS, M. F. (1952). **The relation of prepartal and postpartal mineral balances to the occurrence of parturient paresis in dairy cows.**—*J. Dairy Sci.* **35,** 587-594. [Authors' summary copied *verbatim.*] 513

Data are presented for average blood and urinary levels of Na, K and chloride on 16 parturitions in dairy cattle over a period from 30 days prepartum to 30 days postpartum. Parturitions were studied in mature Jersey cows, some of which developed milk fever, in primiparous Jerseys and in mature Guernseys and Holsteins, none of which developed milk fever. The total intake and excretion during this period of Na, K and Ca also is presented for the same animals.

Blood chloride levels were lower, particularly in the period between 5 and 30 days pre-

partum, in the milk-fever group than in any other group. Postpartal blood chloride levels were as high as prepartal levels only in the milk fever group.

Urinary K excretion in the milk-fever group decreased markedly between 2 days prepartum and the day of parturition. This abrupt decrease in K excretion was not characteristic of any other group. Urinary chloride excretion decreased more rapidly (and from a higher level) between 5 and 2 days prepartum in the milk-fever group and in the mature Guernseys and Holsteins than in the other groups.

The cows developing milk fever had a severe negative balance of Ca prior to parturition, while the normally calving cows were in positive Ca balance during this period. All cows were in negative Ca balance following parturition. Cows developing milk fever were in a severe negative K balance throughout the study, while the other groups were nearly in equilibrium.

TALSMA, D. (1952). Onderzoekingen en beschouwingen over acetonaemia post partum bij de Friese melkkoe. **[Research and theories on post-parturient acetonaemia in Friesian dairy cows.]** — *Thesis, Utrecht.* pp. 131. [Abst. from English summary.] **514**

Acetonaemia is common in the Friesland area of the Netherlands. A high blood and urine ketone level without hypoglycaemia causes no clinical symptoms. The presence of propyl and butyl alcohols in the blood may be a partial cause of the symptoms.

Clinical trials were carried out on suggested remedies including choline, potassium chlorate, potassium chloride, sodium chlorate, sulphanilamide, potassium lactate, methylene blue and chloral hydrate. The highest proportions of cures were obtained with the chlorates, with chloral hydrate and also with exercise.

The aetiology of the condition is complex and may involve dysfunction of the liver, the pituitary adrenal hormone system and rumen fermentation. The latter is probably important in Friesland in view of the large quantities of silage that are fed.—E. J. H. FORD.

See also abst. **357** (fish-oil supplements and pullorum testing).

DISEASES, GENERAL

STALLYBRASS, C. O. (1950). **Epidemics, old and new.**—*Med. Offr.* **84,** 83-87. **515**

A philosophical lecture by a very experienced epidemiologist. In the past, pestilence has often been the major factor in invasions by foreign armies, with resultant failure of their quests. S. quoted examples of such occurrences from ancient history. Pestilence has been an important factor in moulding history. Malaria threatened the attempts of Alexander the Great to conquer the world as he knew it. Typhus caused the failure of Napoleon's attempt to conquer Russia, not the Russians or the climate. S. gave other examples of the failure of large-scale enterprises because of the disease factor. He compared the present state of hygienic and immunological knowledge and the progress that has removed so many of the old and terrible hazards to health.—JAMES H. HALE.

I. SNEDECOR, G. W. (1947). **An experiment in the collection of morbidity and mortality data on farm animals.**—*Proc.* 51*st Ann. Meet. U.S. Livestock sanit. Ass.* pp. 218-225. **516**

II. STABLEFORTH, A. W. (1950). **Mortality and morbidity data in Britain.**—*Proc.* 54*th Ann. Meet. U.S. Livestock sanit. Ass.* pp. 219-225. **517**

III. ANON. (1950). **Report of the committee on morbidity and mortality 1950.**—*Ibid.* pp. 226-233. **518**

I. The survey was made on 177 randomly selected farms in 70 out of the 99 counties of Iowa. Information was collected by visits at three-monthly intervals over a period of 14 months. Summaries were given on mortality and sanitary conditions in cattle and swine and there is a note on the general attitude of farmers to veterinary services.

Most of the swine losses occur at birth; for example, of 16,507 pigs farrowed during the course of a year, 18·3% did not survive until weaning. Most of them were either stillborn or died within a few hours. In older pigs, the mortality over a year was 3·5%.

9·8% of 1,006 calves born died at or within a month of birth. In calves that survived one month, the death rate was 2·4%. The principal causes of death of calves over one month old were pneumonia and haemorrhagic septicaemia. Some estimate was given of the financial losses caused by disease.

II. S. gave a general account of the position in Britain with regard to the notifiable diseases, emphasizing the very favourable posi-

tion with regard to certain of the more serious ones.

He described the legislation concerned and the manner in which it operates, and gave examples of the form in which the figures for outbreaks are reported by the Ministry of Agriculture. He discussed in general terms the more important non-scheduled diseases, mentioning the activities of the Technical Development Committee of the British Veterinary Association which has been responsible for reports on certain of these diseases.

III. The committee found much support amongst private individuals for the collection of vital statistics and made proposals for the organization of a scheme for the collection of such data although official sources were unable to supply funds.—E. J. H. FORD.

SCOTT, R. O. (1951). **Veterinary medicine in the United States of America.**—*Vet. Rec.* **63,** 771-773. 519

A brief survey of the methods for control and eradication of certain diseases was given. The practitioner controls diseases dependent upon preventive immunization, *e.g.* swine fever and rabies unless they assume epizootic form when the Federal and State governments intervene. The Bureau of Animal Industry works on the principle of elimination instead of control of transmissible diseases where possible. The methods used to eradicate TB. and control brucellosis in cattle were given. Present statistics show a decline in the incidence of brucellosis.—R. A. HUCK.

QUIN, A. H. (1952). **Newer problems in swine diseases** [Rhinitis; gut oedema; and antibiotic side effects.] **Control and treatment.**—*Canad. J. comp. Med.* **16,** 265-270. 520

Q. discussed clinical observations on atrophic rhinitis and its control. Oedema disease of pigs is usually seen in pigs of 40–120 lb. weight and in the summer. Attention was drawn to a disease syndrome in swine apparently induced by feeding rations fortified with antibiotic residues and vitamin B_{12}. The clinical picture varies, but some droves develop persistent scouring, symptoms of encephalitis and excessive thirst. Mortality is variable. The condition clears up when the antibiotic intake is withdrawn.—R. GWATKIN.

HEUSSER, H. (1952). Zur Ätiologie der periodischen Augenentzündung. **[Periodic ophthalmia.]**—*Schweiz. Arch. Tierheilk.* **94,** 296-306. [English, French and Italian summaries.] 521

Attempts were made to reproduce periodic ophthalmia by infecting ten horses with *Leptospira pomona*. Of these, two became affected. The first was fed on a diet deficient in vitamin B_2, and inoculated intraperitoneally with cultures. Injection of histamine may have hastened the onset. The second horse became affected seven months after the organism had been administered by stomach tube. H. concluded that periodic ophthalmia is not an independent disease, but a late and infrequent sequel to general infection with leptospira, especially with *L. pomona* or *L. grippo-typhosa* in Switzerland.—ROY MACK.

I. VAN GILS, J. H. J. (1951). Acuut longemphyseem bij het rund, een pathologisch-anatomische studie. **[Acute pulmonary emphysema in cattle, a pathological-anatomical study.]**—*Thesis, Utrecht.* pp. 162. [English, French and German summaries. Abst. from English summary.] 522

II. VAN GILS, J. H. J. (1951). Acuut longemphyseem bij het rund (een pathologisch-anatomische studie). **[Acute pulmonary emphysema in cattle.]**—*Tijdschr. Diergeneesk.* **76,** 833-839. [English, French and German summaries.] 523

I. Chronic lung changes were regularly present in cattle which had died of acute pulmonary emphysema. The affection is especially prevalent just after the cattle have been turned out on to luxuriant aftermath and autumn meadows. Twenty lungs of cattle of varied ages, which had died or were killed *in extremis* as a result of that condition, were examined macroscopically and microscopically, including serial-sections of the affected tissues.

During the macroscopic examinations of the greatly enlarged and very heavy, oedematous lungs, acute pneumonic changes were constant findings; some of the young animals also had a verminous bronchitis. Chronic changes were sometimes present. The subpleural and especially the interstitial emphysema cavities were filled with air, so that the pulmonary ventilation must have been obstructed. The clinical picture indicated that the cattle died during asphyxia.

Microscopic examination revealed an extensive, acute inflammation in a large part of the alveolar tissue. There were also changes in the bronchial system and in the interlobular septa. Apart from a pronounced serous and cellular exudation, many proliferative and degenerative cells were observed. Chronic changes were also present, the type and localisation of which indicated their origin in a chronic bronchitis.

G. concluded that all cattle which have had acute pulmonary emphysema have chronic

changes in their lungs and have a predisposition to the acute form. In cattle which recover clinically, the chronic changes and the predisposition to the acute form remain.

The clinical picture of pulmonary emphysema appears after cattle have ingested large quantities of grass, very rich in protein, with resultant formation of biochemical products. The author suggested that they might be histamine products which, acting through the circulation, increase the tone of the hypertrophied musculature of the bronchial system and possibly also of the blood vessels.

[This condition appears to have the characters of "fog fever" (see *V.B.* **22**, 1093). The word "fog" is used by farmers for the grass, aftermath, which grows after a crop of hay has been taken from a field.]

II. This is a shortened form of the author's thesis. [I *supra*].

HESS, P. F. (1950-51). Untersuchungen über das chronische Blutharnen des Rindes. **[Bovine chronic haematuria.]** — *Schweiz. Arch. Tierheilk.* **92**, 767-784 & **93**, 46-59. [English, French and Italian summaries.] **524**

A general account of bovine chronic haematuria which is enzootic in the Napf region of the Canton of Lucerne.

Chemical examination of extracts of fodder samples from affected farms and from unaffected areas revealed that bracken fern and also hay from affected farms inactivated aneurin to a greater extent than those from unaffected areas. Affected cattle given pure aneurin, brewer's yeast, dried yeast and aneurin-mineral mixtures improved in general health, but the haematuria persisted.—F.E.W.

DERZELLE, E. (1951). Hématurie des nouveau-nés. **[Haematuria in new-born animals.]**—*Ann. Méd. vét.* **95**, 273-275. **525**

D. reported two cases of haematuria in new-born foals and two in new-born calves. He discussed the possibility that this condition is correlated with a deficiency of vitamin K; it was not haemolytic icterus of new-born animals.

—ANITA M. MANDL.

MARTIN, L.-A. & HINTERMANN, J. (1951). Première observation d'hyperkératose des veaux (X disease) au Maroc. **[Hyperkeratosis in calves in Morocco treated with nicotinic acid.]**—*Maroc. Med.* **30**, 117-121. **526**

Calves with hyperkeratosis improved after one month when fed supplements of nicotinic acid at a dose rate of two injections 0·1 g. nicotinamide daily for eight days followed by one daily injection of 0·1 g. for 20 days. When vitamin A was given together with nicotinic acid there was no greater improvement. The authors suggested that hyperkeratosis was caused by a dietary imbalance in a ration containing some sorghum.—CHARLOTTE M. WOOD.

MINETT, F. C. (1950). **Mortality in sheep and goats in India.**—*Indian J. vet. Sci.* **20**, 69-103. **527**

From an analysis of data including (a) particulars of 100–300 or more fatal cases over a three-year period on 16 farms ('direct sample data') and (b) data obtained from annual reports, M. found that two thirds of the total mortality in sheep and three quarters of the total mortality in goats occurs in young stock (1–3 months old), the death rate in males being higher than in females, and higher in weaned than in unweaned kids. When ewes are allowed to lamb twice a year the death rate in both ewes and lambs is higher. Mortality from helminth infestation is highest at 6–24 months of age in sheep; in goats the highest mortality occurs in animals below six months. More stock die between October-March than in the warmer season.—K. C. SINHA.

WHITLOCK, J. H. (1952). **Mismanagement and the disease-prone lamb.**—*Cornell Vet.* **42**, 403-417. **528**

W. stated that conditions under which lambs are transported by rail are very bad and are responsible for losses and made suggestions whereby conditions could be improved.

If *Haemonchus contortus* and the liver flukes be excepted, W. considers that parasites cause clinical disease only in sheep which are already debilitated from some other cause. There appears to be a direct and important connexion between the rapidity with which a lamb grows and the resistance that it has to damage by parasites, and this is partly conditioned by the rate at which it grew during the last two months of pregnancy.

Lambs which are chilled after birth never learn to suck properly and those which are injured shortly after birth seldom do well and tend to succumb to the challenges in later life.

W. discussed other questions, mainly related to the ordinary rules of good husbandry that require attention in order to avoid losses.

—G. B. S. HEATH.

HEMMERT-HALSWICK, A. (1950). Zur Pathogenese des plötzlichen Todes der Schweine. **[Pathogenesis of fatal syncope in pigs.]**—*Berl. Münch. tierärztl. Wschr.* No. 3. pp. 37-42 & No. 4. pp. 64-68. **529**

The author gave a fairly detailed account

of the condition and criticized the use of the name "Herztod" for it.

In the myocardium there may be greyish white foci with undefined borders, or the heart may have a striated appearance. Sometimes there are greyish-white foci in the left ventricular septum. Microscopically there is hyaline vacuolar miliary degeneration. Fatty infiltration is rare. These lesions are indicative of focal non-purulent myocarditis.

—W. Tatham Thompson.

Detweiler, D. K. (1952). **Heart disease in dogs.**—*Bull. Univ. Pa. Vet. Ext. Quart.* No. 125. pp. 21-77. 530

In this monograph, D. gives a concise account of heart disease in the dog, entirely from the point of view of the general practitioner. He gives a detailed description of the correct procedure for carrying out a clinical examination, pointing out that, whilst such signs as systolic murmur, dyspnoea, cough, oedema, susceptibility to fatigue etc., are suggestive of heart disease, a positive diagnosis rests on the presence of "dependable signs" such as auricular fibrillation, diastolic murmur, heart block, thrill over cardiac region etc.

Heart sounds and murmurs, disturbances in rate and rhythm, and cardiac hypertrophy are considered as well as the most important types of cardiac disorders such as pericarditis, myocarditis, myocardial infarction etc. Congestive heart failure is discussed. Here the four most important therapeutic measures are rest, reduction of sodium intake, increase in sodium and water elimination and administration of digitalis.—J. A. Nicholson.

Hansen, H-J. (1952). **A pathologic-anatomical study on disc degeneration in dog. With special reference to the so-called enchondrosis intervertebralis.** — *Acta orthopaed. scand.* Suppl. No. 11. pp. 117. 531

H. discussed the history of disc degeneration and prolapse in dogs and the normal anatomy and physiology of the vertebral column. He studied sex, age and breed incidence. He classified the Dachshund, French Bulldog and Pekinese as breeds possessing chondrodystrophic traits which predispose toward disc degeneration and protrusion, gave details of P.M. examinations of the vertebral columns of 561 dogs and discussed histological details and the connexion between clinical symptoms and the patho-anatomical picture.

—R. N. Smith.

Jellison, W. L. (1951). **Sealer's finger or speckfinger.** pp. 4. Hamilton, Mo.: Rocky Mountain Laboratory. [Mimeographed.] 532

A note on speckfinger (blubber finger), an occupational disease in Scandinavian people working with seals; it probably occurs among sealers in the islands near Alaska, but has not been reported in American literature. J. discussed its aetiology, which is not clear; it is considered by various Scandinavian workers to be caused by *Corynebact. phocae,* a micrococcus, *E. rhusiopathiae* or a related organism, or a virus.—W. R. Bett.

See also absts. **533-537** (report, Animal Health Trust); **546** (book, shock).

REPORTS

I. Great Britain. (1951). **The Animal Health Trust. Fifth report, general summary, 1st July, 1950-30th June, 1951.** pp. 25. London. The Animal Health Trust. 533

II. Great Britain. (1951). **The Animal Health Trust. Fifth report, farm livestock section, 1st July, 1950 - 30th June, 1951.** pp. 15. London: The Animal Health Trust. 534

III. Great Britain. (1951). **The Animal Health Trust. Fifth report, equine section, 1st July, 1950-30th June, 1951.** pp. 12. London: The Animal Health Trust. 535

IV. Great Britain. (1951). **The Animal Health Trust. Fifth report, canine section, 1st July, 1950-30th June, 1951.** pp. 15. London: The Animal Health Trust. 536

V. Great Britain. (1951). **The Animal Health Trust. Fifth report, poultry section, 1st July, 1950-30th June, 1951.** pp. 19. London: The Animal Health Trust. 537

I-V. These reports give a detailed account of the work of the Animal Health Trust for the 12 months under review. The facts given in the general report are a summary of those in the sectional reports. Details of the outstanding scientific work done are, or will be, published in the relevant periodicals. Plans of the research stations, lists of staff and recipients of grants and a financial statement are given.

—R. G. Mares.

Jamaica. (1951). **Annual report of the Department of Agriculture for the year ended 31st March, 1951.** pp. 25. Kingston: Govt. Printer. 2s. 6d. [Report of Veterinary and Livestock Division pp. 14-20.] 538

The veterinary staff consists of the Deputy Director of Agriculture (Veterinary Services) and six veterinary officers.

The most important diseases throughout the year were related to nutrition and husbandry. Mineral deficiency is very important; phosphorus is the most important and, it is suspected, also copper and cobalt. There is need for considerable improvement in the quality of the husbandry. Six outbreaks of SWINE FEVER occurred. STERILITY in cattle appears to be on the increase. Prolapse of the vagina is an obstetrical trouble that is noted, particularly in poorly-nourished animals in the hilly districts. There is improvement in the measures taken for the control of ticks, partly because of the use of improved dips, notably benzene hexachloride (B.H.C.). Tolerance to B.H.C. has been recognised. Helminth parasite infestation is important. The work of the Veterinary Investigation Officer was somewhat disorganized by staff changes that entailed dealing with other work.—S. E. FOX.

UNITED STATES OF INDONESIA. (1951). Jaarverslag van het veeartsenijkundig instituut te Bogor over het jaar 1948. [**Annual report of the Veterinary Institute of Bogor for 1948.**] [DE BOER, E.]—*Hemera Zoa.* **58,** 619-638. **539**

The work of the re-constituted institute is reported on under three departmental headings: (A) general investigation—histopathological, chemical, parasitological and miscellaneous; (B) serodiagnosis and chronic infectious disease (MELIOIDOSIS, TB. and BRUCELLOSIS); (C) preparation and control of antisera and vaccines (including those against ANTHRAX, avian type TB. and COLIBACILLOSIS).

—W. T. THOMPSON.

U.S.A. (1951). **The Rockefeller Foundation. International Health Division. Annual Report 1950.** pp. 211. New York: Rockefeller Foundation. **540**

The epidemiology of HISTOPLASMOSIS (*H. capsulatum*) and its differentiation from TB. is being studied.

Recent advances in the study of RABIES which form the basis of some of the recommendations for the control of the disease include: the development of quantitative mouse tests for studying the antigenicity of vaccine virus strains and the immunizing value of rabies vaccine, and also the development of an avianized rabies virus vaccine for immunization of dogs. A method of testing for the paralysis-producing properties of virus infected brain tissue has been discovered. Recent studies show that it is possible to remove these properties from brain tissue material used for vaccine production.

During epidemiological investigations of yellow fever in Africa and South America the International Health Division discovered a group of 17 viruses which were not the agents of any known disease. Two of these viruses were from human beings and the others were from mosquitoes. Nine were from Africa and eight from South America. All were propagated by intracerebral inoculation of mice. Each has neurotropic affinities and they were isolated by virtue of these properties. These viruses are being studied from many aspects. Five of the viruses lose their potency on desiccation *in vacuo,* two others suffer some loss of potency. Variations in pathogenicity for mice have been observed. This is shewn in the incubation period, in the survival time, and in the titres. Some are pathogenic for mice only by extraneural inoculation and others only by neural inoculation. As the antibody involved in the complement-fixation test is different from the antibody in the virus neutralization test in mice, both tests were used to study the relationships and differences of the neurotropic viruses.

In East Africa YELLOW FEVER is transmitted from infected monkeys, particularly the red tailed monkey, by *Aedes* (*Stegomyia*) *simpsoni* to human adults and children in banana plantations. The monkeys raid the plantations and so mosquitoes become infected and transmit the virus to man. In West Africa a new desiccated product for scratch vaccination has been developed using 17D strain of yellow fever virus grown on embryonated eggs and requiring only the addition of water. This product has the advantage of eliminating the danger in using a mouse brain vaccine, of other viruses being present. This new vaccine is combined with a phenolized sheep lymph smallpox vaccine to give protection against both diseases simultaneously.

Fellowships and travel and training grants were awarded to 97 individuals—$200,000 were allocated for this purpose. Tables give details of expenditure from 1913-50.—J. A. GRIFFITHS.

U.S.A. (1952). **Department of Agriculture. Report on the Agricultural Experiment Stations, 1951.** pp. 170. [Items of veterinary interest pp. 62-87.] Washington, D.C.: U.S. Govt. Printing Off. 40 cents. **541**

Production of meat in the U.S.A. has become an important need, and the veterinary department has concentrated on methods of increasing production. Other than feeding anti-

biotics and synthetic diets to calves, this has been achieved by evolving improved methods of management. Research into losses among piglets continues. An account in general terms is given of the work in progress throughout the U.S.A. Most of this has been reported in the scientific journals and has been abstracted in this Bulletin.—G. B. S. HEATH.

BOOK REVIEWS

SCOTT-WILSON, H. W. [Director of the Laboratories of Pathology and Public Health, London.] (1952). **Aids to bacteriology.** pp. viii + 390. London: Baillière, Tindall & Cox. 8th Edit. 7s. 6d. **542**

Like its predecessors, this 8th edition is primarily intended for use by medical students, but veterinary bacteriology is touched on in a number of places. Some of the information on the veterinary aspects requires revision, for example only two types of tuberculin are mentioned, namely Koch's Old Tuberculin and Purified Protein Derivative. The latter is stated to be prepared from Old Tuberculin whereas it is nowadays invariably prepared from culture grown on synthetic media to avoid the complications arising from the inclusion of foreign protein matter in Koch's Old Tuberculin. There is no mention of the use of synthetic media in the preparation of tuberculin. The tuberculin test for cattle described is the old double intradermal test which went out of use about six years ago.

Dealing with Johne's disease, johnin is stated to be an effective diagnostic preparation. Melioidosis is stated to occur in man and rodents and there is no mention of its occurrence in horses, sheep and cattle. The geographical distribution given as Burma and the Malay States is inadequate as the disease has been reported from many other countries particularly Ceylon and Australia. The account of *Brucella abortus* omits mention of immunization by the Strain 19 vaccine. For rinderpest the only method of immunization given is by formolized vaccine and serum.

The information on diseases of animals requires considerable revision.—M.C.

TRAUTMANN, A. & FIEBIGER, J. (Translated and revised by HABEL, R. E. & BIBERSTEIN, E. L.) (1952). **Fundamentals of the histology of domestic animals.** (Translated and revised from the 8th and 9th German edition, 1949.) pp. xiii + 426. London: Baillière, Tindall & Cox. 67s. 6d. **543**

Although this is the first book in English on veterinary histology to be published in Great Britain, its long history goes back to Ellenberger's *Handbuch der vergleichenden Histologie der Haussäugetiere* (1887). In 1888 the same author's *Grundriss der vergleichenden Histologie der Haussäugetiere* appeared, a textbook based on the earlier, larger work of reference. This has passed through several editions. Since Ellenberger's death in 1928, his collaborator Trautmann has carried on the good work with Fiebiger and now, at last, this translation into English has been published. How it compares with its distinguished precursors is another matter. According to the preface:

> "The adaptation of this book to the needs of the American veterinary student was a considerably larger task than simple translation. The material has been rearranged and *some of the more oppressive detail has been eliminated.* (Reviewer's italics.) Wherever it seemed necessary for clarity, the original text has been supplemented. When the text was at variance with the ideas commonly accepted in Great Britain, it became necessary to consult the literature and attempt to reconcile the differences."

Criticism is almost disarmed by so frank an editorial confession. Obviously this English edition is of only passing interest to the specialist. The text, for the most part, is simple, straightforward and free from "oppressive detail" to the extent of descending at times to vague generalities. This is particularly the case in the section on the central nervous system—(the medulla oblongata is dismissed in some twelve lines)—and in those dealing with haemopoiesis and the cytology of blood. However there is assembled information which would otherwise be scattered in journals, for example the comparative accounts of placentation, the pituitary gland and the stomach.

The ground plan of the book is sensibly conventional: a brief introductory section on general histology followed by an account of the microscopic anatomy of the body, organ by organ, tissue by tissue. The monochrome illustrations are clearly printed and clearly labelled. The colour plates, however, are far from satisfactory, superimposition of the separate colours varying from moderately successful to poor—see plates 223 and 225. The magnification of the illustrations is not mentioned. The few footnotes consist almost entirely of little lessons in etymology. Few references are quoted and these are mainly general. Although the original of the translation was published in 1949, there is little reference to histochemistry, while no use whatever has been made of electron microscopy to pursue ultimate, essential histological detail.

All in all a disappointing book, but one which has its merits.—L. M. MARKSON.

NICOLAS, E. & BRION, A. (1952). Vade-mecum du vétérinaire. Formulaire vétérinaire de pharmacologie, de thérapeutique et d'hygiène. **[A veterinary vade-mecum. Pharmacology, therapeutics and hygiene.]** pp. xvi + 842. Paris: Vigot Frères. 9th Edit. Fr. 3000. **544**

This 9th edition has been edited by Professor A. Brion, Professor E. Nicolas, the last survivor of the three original authors, having died in 1950. It is a handy-sized book of 842 pages containing condensed information on a very wide range of subjects including pharmacology, method of administration of medicines, materia medica, an index to treatment of specific diseases, hygiene, posology and many others. Although the print is small it is very easy to read and a great mass of useful information has been compressed into small space. Practitioners acquainted with the French language will find it an extremely useful aid to memory.—M.C.

THORNTON, H. [Chief Veterinary Officer, City and County of Newcastle-upon-Tyne.] (1952). **The inspection of food. A handbook for students of public health, agriculture and meat technology.** pp. 223. London: Baillière, Tindall & Cox. 12s. 6d. **545**

This book is primarily intended as a guide for those studying to become sanitary inspectors, but also for butchers, health visitors and even agricultural students. It meets a long-felt want and will be of immense benefit, not only for those preparing for their examinations but even for those more advanced who want to "brush up" their knowledge. The book covers the various aspects of food inspection in a short and concise form, although ten of its twelve chapters deal with meat and meat products. It is written by one who has an extensive experience as a teacher and an examiner, and is thus of especial practical value.

There is a most useful glossary of terms used in meat inspection and also a summary of the pathological conditions as they affect the various organs. Another good feature of the work is the inclusion of a series of examination questions, eight questions being set for each of the twelve chapters which comprise the book.

While the work is not, nor was ever intended to be, a complete treatise on food inspection by itself, it must be considered to be excellent for those wishing to refresh their memories and a source of reference for the busy inspector. We strongly recommend this book which is of such a handy size that it can easily be carried about for reference.

—D. S. RABAGLIATI.

GREEN, H. D. [Professor of Physiology and Pharmacology, Bowman Gray School of Medicine, Wake Forest College, Winston-Salem, North Carolina. Edited by.] (1952). **Shock and circulatory homeostasis. Transactions of the first Conference, October 22-23, 1951, New York, New York.** [Sponsored by the Josiah Macy, Jr. Foundation.] pp. 245. New York: Josiah Macy, Jr. Foundation. $3.50. **546**

The subjects discussed, together with the names of the opening speakers were:—"Humoral vasoactive and other metabolic derangements" by R. W. Zweifach; "The nervous system in shock" by J. W. Remington; "Acute and chronic hypotension after haemorrhage in man" by E. P. Sharpey-Schafer"; "The infectious element in shock" by J. Fine; and "The therapeutic implications of current concepts of shock" by F. D. Moore. References are given at the end of each of these sections and there is a useful index.—M.C.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude reviews.]

CRAPLET, C. (1952). Reproduction normale et pathologique des bovins. **[Normal & pathological reproduction of cattle.]** pp. xxi + 260. Paris: Vigot Frères. Fr. 1700.

HAUSAM, W. (1952). Die Bedeutung der Rinderrassen für die Lederherstellung. **[Breeds of cattle and leather production.]** pp. 148. Stuttgart; Wissenschaftliche Verlagsgesellschaft M.B.H. DM 26.50.

LEVY, J. DE B. (1952). **Herbal handbook for farm and stable.** pp. 274. London: Faber & Faber Ltd. 18s.

SCHMID, J. (1951). Die Blutgerinnung in Theorie und Praxis. **[Coagulation of blood in theory and practice.]** pp. xv + 444. Vienna: Wilhelm Maudrich. DM 50.

STANDFUSS, R. (1952). Bakteriologische Fleischbeschau. **[Bacteriological meat inspection.]** pp. 96. Berlin: Schoetz, R. 4th Revised Edit. DM 14.

WARDLE, R. A. & MCLEOD, J. A. (1952). **The zoology of tapeworms.** pp. xxiv + 780. Minnesota: University Press; London: Geoffrey Cumberlege. 80s.

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CONTENTS

DISEASES CAUSED BY BACTERIA AND FUNGI, **547-611.**

Phage classification of staphylococci, **547**; Production of enterotoxin by staphylococci from the bovine mammary gland, **548**; Penicillin content of milk after infusions, **549**; Sugars in the production of capsular polysaccharide and lactic acid by *Str. pyogenes*, **550**; Reservoirs of infection of *Micrococcus pyogenes* in mastitis, **551**; Resistance to streptomycin, **552**; Streptococci from the uterus of mares, **553**; Streptococci from swine, **554**; Effect of amino-acids on the activity of streptococcal hyaluronidase, **555**; Actions of streptomycin and of penicillin on *B. anthracis*, **556**; Stabilization of spore suspensions of *B. anthracis* by merthiolate, **557**; Isolation of *M. tuberculosis* by inoculation of the yolk sac of eggs, **558**; TB. of the c.n.s. of carnivores, **559**; Bovine type TB. in man, **560**; Treatment of TB. with hyperthermia and streptomycin, **561**; Growth inhibition of tubercle bacilli by analogues of biotin, **562**; Reproduction in avian type tubercle bacilli, **563**; Metabolism of virulent and avirulent mycobacteria, **564**; Action of antihistamine on the tuberculin reaction, **565**; The Bureau's [B.A.I.] work with tuberculin, **566**; Evaluation of acid-fast allergens on goats, **567**; Treatment of Johne's disease, **568**; Pustular dermatitis of the udder in sheep associated with *Corynebacterium*, **569**; Studies on *C. renale*, **570**; Bacterial flora of infertile cows, **571**; Swine erysipelas induced by skin scarification, **572**; A saponin vaccine against haemorrhagic septicaemia in cattle, **573**; Immunization against pasteurellosis, **574**; Salmonellosis in dogs, **575, 576, 577 & 578**; Specific and non-specific reactions in infectious diseases, **579**; Suppression of growth of *S. anatum* and *S. oranienburg* by variation of energy sources in medium, **580**; Bovine brucellosis, **581**; A naphthoquinone derivative in treatment of bovine brucellosis, **582 & 583**; Streptomycin-fast cells in brucella cultures, **584**; Alanine synthesis and carbohydrate oxidation by smooth *Br. abortus*, **585**; Dye sensitivity of brucella, **586**; A spirochaete from the rumen, **587**; Bovine leptospirosis, **588**; Leptospirosis in horses, **589**; Bovine leptospirosis, **590**; Enterotoxaemia in a calf due to *Cl. welchii*, **591**; Hamsters for differentiation of *Cl. chauvoei* and *Cl. septicum*, **592**; Aetiology of bradsot, **593**; Duration of immunity in horses and sheep after tetanus vaccine, **594**; Effect of penotrane on the growth of *C. albicans* and *A. fumigatus*, **595**; Bovine mastitis caused by *Cryptococcus neoformans*, **596**; Tinea capitis, **597**; New ultra-violet generator for diagnosis of tinea capitis, **598**; Potassium hydroxide as an aid in examination for fungi, **599**; Actinomycotic brain abscess, **600**; Immunization against bovine contagious pleuro-pneumonia, **601**; Pleuropneumonia-like organisms and media for their isolation, **602**; Susceptibility of pleuropneumonia-like organisms to the action of soaps, **603**; Fermentative activities of the flora of the horses's large intestine, **604**; Biology of bacterial spores, **605-611**.

DISEASES CAUSED BY PROTOZOAN PARASITES, **612-620.**

Amoebic infection in dogs, **612**; Pigment in trypanosomiasis, **613**; The biology of *Tr. foetus*, **614**; Diagnosis of bovine trichomoniasis, **615**; *Tr. foetus* infection in heifers, **616**; New piroplasms of a genet cat and a ground-squirrel from Kenya, **617**; Bovine anaplasmosis treament with trifloryl, **618**; Toxoplasmosis, **619**; Diagnosis of *Toxoplasma* infection in dogs, **620**.

DISEASES CAUSED BY VIRUSES AND RICKETTSIA, **621-645.**

Rabies, **621**; Rabies committee of W.H.O., **622**; Multiplication of influenza virus under conditions of interference, **623**; Inhibition of influenza virus by 2,5-dimethylbenzimidazole, **624**; Influenza virus receptor areas on fowl and on sheep r.b.c., **625**; Further studies on the natural transmission of the common cold, **626**; Response of domesticated animals to Coxsackie, MM, and Theiler viruses, **627**; Bluetongue virus isolated in Israel, **628**; Pathology of virus anaemia of swine, **629**; Treatment of distemper with garlic, **630**; Canine distemper and "hard pad" disease, **631**; Lepine and Sautter's disease of g. pigs, **632**; Literature on Newcastle disease, **633**; N.D. diagnosis, **634**; The haemagglutination test in diagnosis of N.D., **635**; Functional localization of lesions in N.D., **636**; N.D.V. from the osprey and parakeet, **637**; N.D. in the dog-faced baboon, **638**; Adsorption of N.D.V. on r.b.c., **639**; Electron microscope studies of infectious bronchitis virus, **640**; Chronic respiratory disease of chickens, **641**; Psittacosis in a family from pigeons, **642**; Vitamin B_{12} in the treatment of viral hepatitis, **643**; Technique employing embryonating eggs to test virus-transmitting ability of vectors, **644**; Immunological barriers to viral growth, **645**.

IMMUNITY, **646-650.**

Antigenicity of bovine spermatozoa, **646**; Blood groups of mules, **647**; Iso-immunisation of mule-breeding mares, **648**; Iso-immunisation in mares, **649**; Haemolytic disease of foals, **650**.

PARASITES IN RELATION TO DISEASE [GENERAL], **651.**

Poultry parasites in deep litter.

PARASITES IN RELATION TO DISEASE [HELMINTHS], **652-655.**

Obscure sheep disease at Hosur, **652**; Effect of a sub-clin. worm-burden on the weight gain of sheep, **653**; Effects of *O. venulosum* on sheep and goats, **654**; The lung nematodes of sheep and goats, **655**.

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS], **656-675.**

Carcinoma of the stomach of a dog, **656**; Rabbit papillomas caused by the Shope

virus **657**; Geographical variations in cancer mortality, **658**.

NUTRITIONAL AND METABOLIC DISORDERS, 659-676.

Monozygotic twin cattle in nutrition research **659**; Effect of fat in the diet on the growth of dogs, **660**; Cholesterol atherosclerosis, **661**; Hepatic necrosis induced by dietary means, **662**; Utilization of the minerals, vitamins and other constituents of grass, **663**; Response of cobalt-deficient sheep to massive doses of vitamin B_{12}, **664**; Control of cobalt-deficiency in sheep by inj. of vitamin B_{12} **665**; Influence of cobalt on B_{12} in the faeces of sheep, **666**; Response to vitamin B_{12} of cobalt-deficient lambs, **667**; Molybdenum in relation to livestock under Irish conditions, **668**; Effect of molybdenum upon chicks and poults, **669**; The physiological importance of the casein phosphopeptide calcium salts, **670** & **671**, Effect of ascorbic acid on the adrenal glands, **672**; Digestibility of carotene by the cow and the goat as affected by thyroxin and thiouracil, **673**; Sleepy sickness and milk fever in ewes, **674**; Treatment of pregnancy toxaemia in ewes by glycerol, **675**; Relief of hypoglycaemic convulsions with butyric acid, **676**.

DISEASES, GENERAL, 677-688.

The cause of disease, **677**; Radiography of horses, **678**; Novarsenobenzol in treatment of pulmonary emphysema in horses and cattle, **679**; Differential diagnosis of tuberculous pericarditis, traumatic pericarditis, myocardial and pericardial leucosis, **680**; Right heart failure, **681**; Bloat in ruminants, **682**; Experimental transmission of oedema disease of pigs, **683**; Oedema of new-born pigs, **684**; Vulvovaginitis of swine, **685**; Atlas of pathological anatomy, **686**; Effect of D.C.A., ascorbic acid and cortisone on formalin-induced arthritis, **687**; The fluorine problem in livestock, **688**.

POISONS AND POISONING, 689-701.

Methaemoglobinaemia due to nitrates in water, **689**; Trichloroethylene-extracted soya bean meal, **690**; Toxicity of the 'organo-phosphorus' insecticides, **691**; Bovine hyperkeratosis, **692**; Action of *Veratrum* on the autonomic nervous system, **693**; Suspected algal poisoning, **694**; Poison sedge and cyanogenesis, **695**; The blood picture in a haemorrhagic disease of cattle, **696**; Toxic plants of the genera *Gastrolobium* and *Oxylobium*, **697**; Effect of aureomycin, terramycin and chloramphenicol on livers of mice and dogs, **698**; Toxicity of bacitracin, **699**; Toxicity for horses of B.H.C., **700**; Hypersensitivity, stress, and toxicity, **701**.

PHARMACOLOGY AND GENERAL THERAPEUTICS, 702-711.

(For the treatment of specific infections see under the appropriate disease) Intra-arterial transfusion, **702**; Snake venoms in vet. practice, **703**; Canine penicillin blood levels, **704**; Penicillin concentrations in c. s. f., **705**; Effect of metal syringes on penicillin, **706**; Neuropharmacology of peripheral nerve, **707**; Non-surgical treatment of cataract, **708**; Effect of ascorbic acid and A.C.T.H. on the adrenal cortex, **709**; Cyclopropane and oxygen in anaesthesia of the goat, **710**; Anaesthesia for the eye, **711**.

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY, 712-727.

Aids to physiology, **712**; Weight and body temp., **713**; Cutaneous pigmentation in bovine skin, **714**; Synthesis of milk fat from acetic acid, **715**; The milk "let-down" hormone, **716**; The neurohypophysis in the milk-ejection reflex, **717**; Heart rate of cows, **718**; Variances in horse blood, **719**; Blood pyruvic acid levels of horses, **720**; Blood values of the donkey, **721**; Blood groups in sheep, **722**; Haematological studies on alpacas and vicunas, **723**; The c.s.f. of the horse, **724**; Vacuolated cells in the dorsal root ganglion of the rabbit, **725**; Adrenal glands and bone-growth, **726**; Lab. manual of biochemistry, **727**.

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION, 728-735.

Milk hygiene, **728**; Meat hygiene, **729**; Changes in whalemeat during storage, **730**; Importation of disease by bone meal, meat meal and blood meal, **731**; A rat poison containing a coumarin deriv., **732**; The U.S. Army Vet. Service, **733**; Wildlife Disease Association, **734**; Protection for the lab. worker, **735**.

REPRODUCTION AND REPRODUCTIVE DISORDERS, 736-770.

Artificial breeding in New Zealand, **736**; Cows' milk as a diluent for bull semen, **737-739**; Mercurochrome as semen stain, **740**; Spermicidal effect of physiologically active substances, **741**; Ripening and agglutination in bull spermatozoa, **742** & **743**; Abnormal spermatozoa of bull semen, **744**; Spermatogenesis in rams, **745**; Non-returns to service as a measure of the fertility of bulls, **746**; Determination of paternity in cattle, **747**; Forces during coitus in Thoroughbreds, **748**; Fertility in the Thoroughbred mare, **749**; The 'capacitation' of the mammalian sperm, **750**; Use of gonadotrophins in the bull, **751**; Response of cows to gonadotrophins, **752**; Injections of stilboestrol on the functions of ovaries in mares, **753**; Effect of stilboestrol in retention of the placenta, **754**; Fattening of pigs by oestrogens, **755**; Hormonal aspects of sterility in cattle, **756** & **757**; Sterility in dairy herds, **758**; Fertility in cattle, **759**; Causes of sterility of cows and mares, **760**; Protein content of the diet and fertility in bulls, **761**; Effects of irradiation upon fertility of male rabbits, **762**; Aspermatogenesis in a stallion, **763**; Diagnosis of cryptorchidism in boars using the Allen-Doisy test, **764**; Congenital dislocation of the hock-joint in fowls, **765**; Ann egg encrusted

with protoporphyrin, **766**; *Post-partum* endometrial repair, **767**; Aureomycin in retained placenta in cows, **768**; Breeding studies, **769**; A mathematical treatment of genetical recombination using a four-strand model, **770**.

ZOOTECHNY, 771-775.
Acclimatization, **771**; Drying of hides and skins, **772**; A handbook of the husbandry of dairy cattle, **773**; Grazing behaviour studies, **774**; Cross-breeding of yaks and cattle, **775**.

TECHNIQUE AND APPARATUS, 776-784.
Mechanical breaking-up and extraction of bacteria, **776**; Ethyl violet, a selective dye for the isolation of Gram-negative bacteria, **777**; Distinguishing saprophytic from virulent mycobacteria, **778**; The golden hamster, **779**; Mineral oil in the maintenance of cultures of fungi, **780**; Techniques in the study of fungal infections, **781**; Method for obtaining *T. equinum* in large numbers, **782**; Chamber for aseptic microdissection, **783**; A liver biopsy technique for cattle, **784**.

MISCELLANEOUS, 785-787.
Doping of racehorses, **785** & **786**; Medical aspects of flight above the atmosphere, **787**.

REPORTS, 788-790.
U.S.A. Florida Agricultural Experiment Stations for 1951, **788**; Iowa Agricultural Experiment Station 1949-51, **789**; Massachusetts Agricultural Experiment Station for 1951, **790**.

BOOK REVIEWS, 791-796.
Sheep diseases [Newsom], **791**; The tissues of the body. An introduction to the study of anatomy [Clark], **792**; Repair of the perineum and plastic surgery of the vulva and vestibulum in mares and cows [Götze], **793**; Special veterinary surgery [Leuthold], **794**; Textbook of meat inspection. Including the inspection of rabbits, poultry and fish [Thornton], **795**; Paper chromatography. A laboratory manual [Block *et al.*] **796**.

BOOKS RECEIVED, pp. 131-132.

INDEX TO AUTHORS

Abramson, H. A., page 131.
Adler, H. C., 746.
Ajello, L., 780.
Aldridge, W. N., 691.
Alexander, F., 604.
Altenbern, R. A., 585.
Amschler, J. W., 775.
Anderson, R. J., 735.
Andre, F., 789.
Andrewes, C. H., 626.
Andrews, E. D., 667.
Antonov, M. I., 630.
Apitz, K., 686.
Arentzen, W. P., 596.
Van Arsdell, W. J., 784.
Auer, J., 636.
Austin, C. R., 750.
Avant, W. H., 612.

Banks, A. W., 720.
Barnes, J. M., 691.
Barnes, L. A., 580.
Bartha, A., 614.
Bassett, E. G., 716.
Batory, C. F., 704.
Bauer, F., 620.
Beare, J. M., 597.
Beattie, J. H., 768.
Beaudette, F. R., 633.
Behrens, H., 724.
Beiler, J. M., 741.
Bell, W. B., 548.
Belot, M., 700.
Bennetts, H. W., 697.
Beveridge, J. M. R., 662.
Bingham, D. L. C., 702.
Bland, J. H., page 131.
Blaxter, K. L., 663.
Block, R. J., 796.
Bonadonna, T., 747.
Bondar, G. F., 694.
Bonnaud, P., 763.
Borek, E., 727.
Bouley, G., 579.
Bourdelle, E., page 131.
Bourne, R. F., 692.
Bürkel, F., 779.
Bressou, C., page 131.
Brieger, E. M., 563.
Brion, A., 648.
Brock, W. E., 629.
Browning, G. M., 789.
Brubeck, J. W., 558.
Brueckner, A. L., 638, 640.
Brügger, H., 560.
Bruger, M., 661.
Bryant, M. P., 587.
Buddingh, G. J., 558.
Bullis, K. L., 790.

Caballero, Díaz, A., 616.
Cabasso, V. J., 631.
Caldwell, E. R., Jr., 698.
Campbell, R. E., 643.
Campbell, W. A. B., 689.
Candinas, L., 755.
Caretta, A., 751.
Carroll, G., 698.
Carter, T. C., 770.
Chanda, R., 673.
Cheeseman, E. A., 597.
Cherry, L. M., 720.
Clapham, H. M., 673.
Clark, R., 682.
Clark, W. E. Le., 792.
Collier, J. R., 554.
Conceição, J. M., 601.
Copaira, M. A., 723.
Cordier, G., 639.
Cordiez, E., 761.
Cotchin, E., 570.
Cowdery, J., 576.
Cowie, A. T., 715.
Cronin, M. T. I., 553.
Cross, B. A., 717.
Crowley, N., 555.
Curran, H. R., 609.

Dardillat, R., 696.
Davis, F., 580.
Dawbarn, M. C., 666.
Day, W. C., 638.
Dean, D. J., 627.
Delpy, L. P., 557, 573.
DesMarais, A., 709.
Diana, A., 556.
Dimitropoulos, E., 759.
Docton, F. L., 646.
Di Domizio, G., 683.
Doutressoulle, G., page 131.
Dowling, H. F., 698.
Dryerre, H., 712.
Duncombe, W. G., 715.

Edman, M., 688.
Edney, M., 623.
Eisenstein, B. E., 586.
Ellenbogen, B. K., 642.
Ely, F., 646.
Eyquem, A., 647.
Fankhauser, R., 559.
Fastier, L. B., 625.
Fazekas de St. Groth, S., 623.
Ferguson, L. C., 646.
Ferris, D. H., 644.
Field, E. J., 725.
Fiennes, R. N. T-W-, 613.
Fifield, C. W., 777.
Fiorentino, A., 751.
Flippin, H. F., 705
Florent, A., 615.
Flynn, J. E., page 131.
Folkers, K., 624.
Folley, S. J., 715.
Fontanelli, E., 569.
Ford, E. J. H., 568.
Fouace, J., 547.
Franklin, T. E., 618.
French, T. H., 715.
Fresdorf, E., 677.
Froman, A., 600.
Furlong, J. R., 772.

Galton, M. M., 575, 576, 577, 578.
Gamble, J. L., page 131.
Gardner, C. A., 697.
Gerichter, C. B., 655.
Gerring, J. C., 674.
Ginsberg, J. R., 708.
Glascock, R. F., 715.
Glauert, A. M., 563.
Glenney, W. C., 704.
Götze, R., 793.
Golaszewski, H., 593.
Goldberg, A., 654.
Goldschmidt, R. B., page 131.
Govindan Nayer, K. N., 722.
Grant, V. Q., 780.
Gray, H., 578.
Greig, W. A., page 131.
Griffiths, W. R., 675.
Grignani, A., 773.
Grober, J., 771.
Grootenhuis, G., 649.
Gruslin, G., 615.
Guilhon, J., 696.
Gunn, R. M. C., 745.
Gutzke, M. A., 780.

Hadek, R., 623.
Haig, D. A., 628.
Hancock, J., 774.
Hanson, R. P., 644.
Harada, N., 753.
Hardy, A. V., 575, 576, 577, 578.
Harmon, M. P., 638.
Harouni, B., 639.
Harris, G. W., 717.
Harris, P. L., page 132.
Harrow, B., 727.
Hart, E. W., 619.
Hartwigk, H., 765.
Hatfield, R. C., 571.
Hein, H., 776.
Heinig, A., 594.
Heisch, R. B., 617.
Henley, R. R., 566.
Hepple, J. R., 591.
Herman, C., 734.
Hignett, S. L., 758.
Hine, D. C., 666.
Holmgren, N. B., 564.
Hopper, M. E., 781.
Horsfall, F. L., Jr., 624.
Horton Smith, C., 595.
Housewright, R. D., 585.
Hoyt, R. E., 586.
Hudemann, H., 728.
Huebner, R. A., 704.
Hughes, P., 666.
Hutt, F. B., 766.

Innes, J. R. M., 596.
Isaacs, A., 623.
Isaksson, B., 670.

Jacobi, M., 708.
Jacquet, J., 739.
Jaquinot, G., 679.
James, J. P., 736.
Jensen, R., 681.
Jones, O. G., 710.
Juncher, H., 549.

van der Kaay, F. C., 760.
Kayahan, S., 672.
Keller, R., 602, 603.
Kihlström, J. E., 742, 743.
Kimball, A. W., 721.
Kinnas, K. S., 786.
Kite, J. H., Jr., 778.
Kliewer, I. O., 629.
Kligman, A. M., 599.
Knaysi, G., 606.
Komarov, A., 628.
Koutz, F. R., 651.
Kratzer, F. H., 669.
Krause, D., 693.
Kriisa, A., 754.
Kujawski, W., page 132.

Lamanna, C., 605.
Larsen, A. B., 567.
Larsen, O. B., 567.
Lasmanis, J., 551.
Lazear, E. J., 646.
Leaming, J. D., 768.
Leblanc, J., 709.
Lee, H. J., 664.
Lees, T. W., 701.
Legon, C. D., 658.
Leonhardt, H., 680.
Lepper, M. H., 698.
Lesbouyries, G., 763.
LeStrange, R., 796.
Leuthold, A., 794.
Levine, M., 610.
Levy, G., 656.
Lewis, G. M., 781.
Lindahl, P. E., 742, 743.
Lindley, D. C., 571.
Litsky, W., 777.
Long, P. L., 595.
Lovell, R., 570.
Lovelock, J. E., 626.
Lucas, A., 579.
Ludovici, L. J., page 132.

Maassen, A. P., 726.
McArthur, A. T. G., 774.
McCallum, J. A., 733.
McElrath, H. B., Jr., 577.
McErlean, B. A., 685.
Mackel, D. C., 578.
McLean, J. R., 662.
McLeod, J. A., 694.
McNaught, M. L., 673.
Macpherson, M. J. D., 604
Magnusson, I., 549.
Mahaffey, L., 749.
Mallmann, W. L., 777.
Maniatakis, I. S., 785.
Mantovani, G., 583.
Marks, J., 561.
Marston, H. R., 664, 665.
Martin, G. J., 741.
Massart, L., 715.
Matteucci, W. V., 705.
Mazur, A., 727.
Mellander, O., 670, 671.
Meschaks, P., 756.
Millar, P. G., page 132.
Millar, R., 748.
Miller, A. R., 729.
Miller, C. M., 642.
Mir Chamsy, H., 557.
Mitchell, C. A., 581.
Mitchell, H. H., 688.
Monti, G., 635.
Moore, L. A., 718.
Moore, T., 581.
Morrison, P. R., 713.
Morton, H. E., 602, 603.
Moussatché, I., 782.
Müller, R. W., page 132.
Murphree, R. L., 762.

Nambiar, K. T. K., 722.
Neenan, M., 668.
Nelson, E. L., 586.
Newsom, I. E., 791.
Nielson, F. W., 731.
Nikolić, M., 622.
Nishikawa, Y., 753.

Oldroyd, H., page 132.
Olesiuk, O. M., 641.
Olitzki, A. L., 584.
O'Moore, L. B., 668.
Oppenheim, E., 661.
Ounais, A., 639.
Owen, E. C., 673.
Oxford, A. E., 604.

Paraf, A., 579.
Paredis, F., 757.
Pasquini, M., 678.
Patnode, R. A., 778.
Paulley, J. W., 619.
Payne, H. G., 699.
Payne, W. J. A., 769.
Pearson, C. C., 629.
Peeters, G. J., 715.
Peck, H. A., 641.
Perry, D. A., 588.
Peterson, D. R., 784.
Pickett, M. J., 586.
Pierce, W. A., Jr., 550.
Podliachouk, L., 647.
Pollitz, H., 703.
Pope, H., 562.
Popják, G., 715.
Poterfield, J. S., 626.
Potter, B. J., 676.
Pruitt, F. W., 643.

Quinchon, C., 579.

Ragni, M., 583.
Rao, C. K., 740.
Ras, N. P., page 132.
Read, T., Jr., 778.
Reagan, R. L., 638, 640.
Reichenow, E., page 132.
Reifenstein, E. C., Jr., page 132.
Reiff, M., 732.
Rivers, J. S., 619.
Roberts, S. J., 589.
Robertson, A., 770.
Robinson, J. W., 589.
Roden, A. T., 626.
Van Roekel, H., 641.
Rössle, R., 686.
Rogers, S., 657.
Rollinson, D. H. L., 744.
Rømer, O., 549.
Rosanoff, E. I., 552.
Royce, R. D., 695.
Rust, J. H., 721, 762.
Ryser, F. A., 713.

Sachs, W., 781.
Sanfile, V., 738.
Satchidanandam, V., 722.
Saxinger, G., 594.
Scales, J. T., 710.
Scatterday, J. E., 575.
Schaetz, 764.
Schimmel, N. H., 705.
Schlesinger, R. W., 645.
Schmidt, C. F., 608.
Schmidt, H., 618.
Schönberg, F., page 132.
Schultz, F. H., Jr., 699.
Schwartzwelder, J. C., 612.
Schweigert, B. S., 660.
Seibold, H. R., 596.
Seren, E., 583.
Serra, A., 582.
Sevag, M. G., 552.
Sharman, A., 767.
Sharp, J. G., 730.
Shropshire, R. F., 708.
Shuman, R. D., 572.
Siebenmann, R., 687.
Siedler, A. J., 660.
Smith, D. L. T., 588.
Smith, G. H., 730.
Smith, P. F., 602, 603.
Smith, R. M., 665.
Sommerville, T., 626.
D'Souza, B. A., 652.
Spedding, C. R. W., 653.
Spencer, G. R., 551.
Spencer, J. N., 699.
Spies, H. W., 698.
Spörri, H., 755.
Stanton, W. R., 783.
Staub, H., 565.
Stone, G. C. H., 727.
Stucker, C. L., 576.
Sugie, T., 753.
Sugiyama, H., 611.
Sumner, J. B., 766.
Swayne, V. R., 741.
Tamm, I., 624.
Thomas, J. W., 718.
Thomas, O. O., 784.
Thornton, H., 795.
ten Thye, J. H., 760.
Tinsley, M., 600.
Toman, J. E. P., 707.
Tropa, E., 574.
Trum, B. F., 719, 721.
Turner, C. W., 716.

Vaviluichev, Y. V., 630.
Veliz, M. O., 548.
Vlachos, C., 737.
De Vries, L., page 132.

Wadsworth, F. J., 710.
Wagreich, H., 727.
Wahl, R., 547.
Walker, R. V. L., 634.
Walsh, T., 668.
Warner, J. N., page 132.
Weidenmüller, H., 592.
Weimershaus, W., 621.
Weiss, K. E., 682.
Westlake, E. K., 619.
Whitaker, M. W., 721, 762.
White, A. G. C., 550.
Whitehair, C. K., 784.
Whittlestone, W. G. 716.
Wiesmann, R., 732.
Wilding, J. L., 721, 762.
Willett, E. L., 752.
Wilson, F. D., 711.
Wilson, J. W., 598.
Wilson, W. W., 705.
Winchester, C. F., 659.
Wingstrand, K. G., page 132.
Wirth, D., 650.
Wolfe, C. K., 698.
Woratz, H., 706.
Wundram, G., page 132.
Wyler, R., 559.
Wynne, E. S., 607.

Yang, S. H., 714.
York, C. J., 589., 590.
Youmans, G. P., 564.
Young, G. A., 684.

Zimmerman, H. J., 698.
Zuydam, D. M., 637.
Zweig, G., 796.

ERRATA

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Ibid. abst. 543, line 25. For "Great Britain", please read " this country" [*i.e.*, the U.S.A.]

List of Abbreviations

A

A.I. — artificial insemination
ant. — anterior
A.P.F. — animal protein factor
approx. — approximately
aq. — aqueous
av. — average

B

B.A.L. — British anti Lewisite (2,3 dimercaptopropanol)
b.p. — boiling point

C

c.f. — complement fixation
clin. — clinical
coeff. — coefficient
conc. — concentration
c.s.f. — cerebrospinal fluid

D

diam. — diameter
dil. — dilute(d)

E

E.I.A. — equine infectious anaemia
equiv. — equivalent

F

ft. — foot (feet) [measurement only]

H

Hb. — haemoglobin
H.I. — haemagglutination inhibition

I

inj. — injection(s)
insol. — insoluble
Inst. (inst) — Institute
i/m — intramuscular(ly)
i/p — intraperitoneal(ly)
i/v — intravenous(ly)

L

lab. — laboratory (-ories)

M

max. — maximum (-al)

N

N.D.V. — Newcastle disease virus
N.D. — Newcastle disease

R

r.b.c. — red blood corpuscles
r.e.s. — reticuloendothelial system
R.H. — relative humidity

S

s/c — subcutaneous(ly)
sol. — soluble(s)
soln. — solution
suppl. — supplement(s) (-ary)
std. — standard

T

temp. — temperature
therap. — therapeutic

U

U.V. — ultra-violet

V

vet. — veterinary
vol. — volume

W

w.b.c. — white blood corpuscles
wt. — weight

/ — per (*e.g.* wt./vol. m.g./lb. body wt.)

Bulletins on disease subjects written for farmers and "popular" articles of a similar nature are not included in the *Veterinary Bulletin*. Those of a sufficiently important nature are, however, included in *Index Veterinarius*; so also are certain review articles, presidential addresses, congress proceedings, etc., where the title conveys as much information as could be given in an abstract of a few lines. For information of this nature, readers of the *Veterinary Bulletin* are referred to *Index Veterinarius*, where titles of all publications indexed by the bureau are fully cross-referenced.

A list of annotations and reviews, classified according to subject, is now given in *Index Veterinarius*, being inserted at the end of each number. Such papers will not necessarily be dealt with in the *Veterinary Bulletin*.

The Editor will be glad to receive publications relating to Veterinary Science and cognate subjects in order that they may be dealt with in the *Veterinary Bulletin*.

Reports of Departments, Special Reports, reprints, etc., etc., should be sent as soon as they are issued.

Books for Review.

The Editor will be glad to receive books for review in the *Veterinary Bulletin*.